



February 14, 2014

■  
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655 North Franklin Street  
Tampa, Florida  
33602

Mr. Venkat Vattikuti, P.E., PTOE  
Charlotte County Planning & Zoning Division  
18400 Murdock Circle  
Port Charlotte, Florida 33948

Re: Sandhill Development of Regional Impact (DRI)  
Charlotte County, Florida  
Substantial Deviation Determination

Dear Mr. Vattikuti:

Pursuant to our discussion on January 30, 2014, Kimley-Horn and Associates, Inc. has prepared the following technical trip generation analysis comparing the Sandhill DRI trips generated by the approved land uses to the land uses that are now proposed at the Sandhill DRI (specifically Tract 5). The focus of this technical analysis is to examine the proposed land uses now planned for Tract 5 in regards to triggering a substantial deviation. The transportation impacts of this site are regulated by Resolution 86-230 which states that an analysis is required to determine if changes (e.g. land use increases in Tract 5) would result in a substantial deviation in traffic from the site. Substantial deviation criteria are determined by Section 380.06, Florida Statue Subsection (b)10 which states that a substantial deviation shall result from "A 15 percent increase in the number of external vehicle trips generated by the development above that which was projected during the original development-of-regional impact review." This analysis compares the trips generated by the land uses originally approved for the Sandhill DRI to the approved plus proposed (for Tract 5) land uses.

#### APPROVED LAND USES

Resolution 2009-237 indicates that the approved land uses for the Sandhill DRI include 2,231,334 square feet of retail space (ITE land use code 820), 2,600 multi-family dwelling units (ITE land use code 220), and a 120 room hotel (ITE land use code 310). The gross trips generated by these land uses are 6,318 total p.m. peak hour trips (3,281 inbound/3,037 outbound). Internal capture was assumed between the retail and residential (multi-family and hotel) land uses. Pass-by trips were assumed for the retail land use. Applying internal capture and pass-by to the gross trips results in the determination of net, new



trips from the project site. The net, new external trips for the approved land uses are 3,848 total p.m. peak hour trips (2,046 inbound / 1,802 outbound). A more detailed breakdown of these trips included in the attached Table 1.

**Table 1**

**APPROVED LAND USES P.M. PEAK-HOUR PROJECT TRIP GENERATION**

ITE TRIP GENERATION CHARACTERISTICS					GROSS TRIPS			NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	In	Out	Total	In	Out	Total
Existing Approvals										
Shopping Center	9	820	2231.334	ksf	2,303	2,495	4,798	1,320	1,512	2,832
Apartment	9	220	2600	DU	941	507	1,448	701	267	968
Hotel	9	310	120	ROOM	37	35	72	25	23	48
					3,281	3,037	6,318	2,046	1,802	3,848

**PROPOSED LAND USES**

The proposed development land uses in Tract 5 (Subtracts C through G) include 224 existing multi-family dwelling units, 516 proposed multi-family dwelling units and 150 independent living dwelling units. In order to provide a conservative analysis, these 890 total dwelling units were analyzed using the multi-family ITE land use code 220. Tract 5 (subtracts C through G) was originally approved for 864 multi-family dwelling units, and now 890 are proposed. This results in an increase of 26 dwelling units. This increase is applied to the original approved 2,600 multi-family dwelling units resulting in (a total) of 2,626 multi-family dwelling units.

Tract 5 (Subtract H) was approved to contain 88,000 square feet of retail, but is proposed to contain 131,000 square feet of retail. This 43,000 square foot increase in retail results in (a total) of 2,274,334 square feet of retail to be analyzed.

Also proposed on Tract 5 is a 408 bed assisted living facility and a 50 bed memory care facility (both ITE land use code 254), and 480,000 square feet of industrial space (ITE land use code 110).

The gross trips expected to be generated by the (total) proposed land uses are 7,064 total p.m. peak-hour trips (3,409 inbound/3,655 outbound). Internal capture and pass-by capture were once again assumed resulting in the determination of net, new external trips. The net, new external trips for the approved land uses are 4,512 total p.m. peak hour trips (2,133 inbound / 2,379 outbound). A more detailed breakdown of these trips included in Table 2.



**Table 2**

**APPROVED PLUS PROPOSED LAND USES P.M. PEAK-HOUR PROJECT TRIP GENERATION**

ITE TRIP GENERATION CHARACTERISTICS					GROSS TRIPS			NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	In	Out	Total	In	Out	Total
Proposed	9	220	2626	DU	950	512	1,462	709	271	980
Apartment	9	254	456	BED	44	57	101	27	40	67
Assisted Living	9	820	2274.334	ksf	2,333	2,527	4,860	1,329	1,523	2,852
Shopping Center	9	110	480	ksf	63	466	529	63	486	529
General Light Industrial	9	710	30	ksf	19	93	112	5	79	84
General Office Building					3,409	3,655	7,064	2,133	2,379	4,512

**APPROVED PLUS PROPOSED & SUBSTANTIAL DEVIATION CALCULATION**

The approved land uses generated a total of 3,848 p.m. peak hour trips and the approved plus proposed land uses generated a total of 4,512 p.m. peak hour trips. The approved plus proposed land uses generate an additional 664 p.m. peak hour trips. This change represents a 14.7% increase in trips from the original approval. This calculation is represented in the attached Table 3. This percent increase is less than the 15% requirement for a substantial deviation. Therefore, it is anticipated that the substantial deviation threshold has not been triggered.

**Table 3**

	Net New External Trips		
	In	Out	Total
<b>Approved</b>	2,046	1,802	3,848
<b>Approved + Proposed</b>	2,133	2,379	4,512
<b>Difference (Trips)</b>	87	577	664
<b>Percent increase</b>	4.08%	24.25%	14.72%

**SUMMARY**

The Sandhill DRI was approved for various land uses, but specific land uses in Tract 5 of the DRI are proposed to change. Therefore, a technical trip generation analysis was conducted to determine if the proposed land use changes result in a substantial deviation, or a 15% increase in number of external trips generated from the site. The trip generation analysis determined that the land use changes result in an increase of 664 p.m. peak hour trips, or a 14.7% increase in trips. Therefore, it is anticipated that the substantial deviation threshold has not been triggered.



Kimley-Horn  
and Associates, Inc.

Mr. Venkat Vattikuti

February 14, 2014

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Please let me know if you have any questions during your review, and we will be happy to answer them. Thank you again for your time regarding this matter.

Sincerely,

**KIMLEY-HORN AND ASSOCIATES, INC.**

Christopher Hatton, P.E.  
Senior Vice President

CC: Matt Mootz  
Geri Waksler

*Notice of Proposed Change (NOPC)  
Transportation Analysis and 2014 Traffic  
Monitoring Report*

*For Submittal to Charlotte County*

**Sandhill DRI (Tract 5)  
Charlotte County, Florida**

*Prepared for:*

ATM II, LLC  
Hialeah, Florida

*Prepared by:*

Kimley-Horn and Associates, Inc.  
Tampa, Florida

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June 2014  
148444001

*Notice of Proposed Change (NOPC) Transportation  
Analysis and 2014 Traffic Monitoring Report*

**Sandhill DRI (Tract 5)  
Charlotte County, Florida**

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Hialeah, Florida

*Prepared by:*

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June 2014  
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## INTRODUCTION

Sandhill is an approved Development of Regional Impact (DRI) located in the vicinity of the Kings Highway (CR 769) & I-75 interchange in Charlotte County, Florida. This Notice of Proposed Change (NOPC) transportation analysis and traffic monitoring report analyzes Tract 5 of the Sandhill DRI, which is located north of the Kings Highway & I-75 interchange. The location of this project is illustrated in Figure 1. This project is a mixed-use development consisting of residential and non-residential (i.e., commercial retail, office, and industrial) uses. Currently, the site contains 224 condominium units.

The Development Order (D.O.) for the Sandhill DRI was originally adopted in February 1981. This D.O., which is referred to as Planned Development (PD-80-4), was amended by various resolutions. The most recent amendment, Resolution 2009-237, required Sandhill to prepare and submit to Charlotte County an Annual Traffic Monitoring Report (ATMR), beginning one year after the issuance of the development order, and would be due every subsequent year until the development is built out. An excerpt of the D.O. monitoring requirements is provided in Appendix A.

As indicated in Resolution 2009-237, the monitoring report would determine the existing and projected levels of service on regional and local facilities in need of improvements in a timely manner. The monitoring report contains P.M. peak hour trip generation estimates and turning movements/segment volumes at each of the access intersections, off-site intersections, and road segments listed in the methodology agreed to with Charlotte County staff, which is attached as Appendix B.

The developer is currently pursuing an NOPC to increase the entitlements for Tract 5. The currently approved land uses for the Sandhill DRI include 2,231,334 square feet of retail space, 2,600 multi-family dwelling units, and a 120 room hotel.

The proposed land uses at buildout for Tract 5 (the project) are anticipated to be comprised of the following land uses:

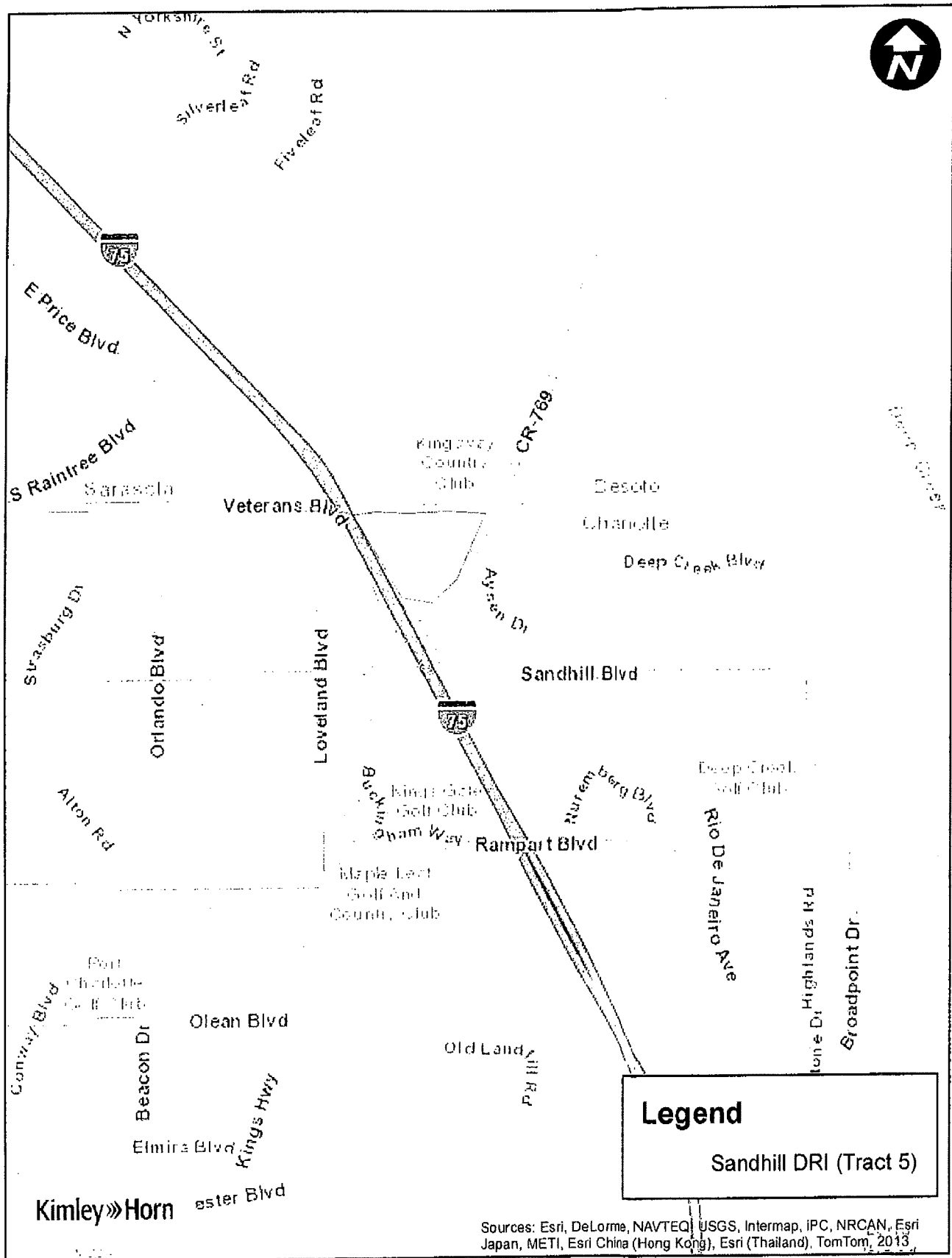
- 890 residential units (or an equivalent to this, including medical beds)
- 131,000 square feet of retail
- 408 bed assisted living facility
- 50 bed memory care facility
- 430,000 square feet of industrial space
- 30,000 square feet of office space

A substantial deviation evaluation was conducted to ensure that project-related traffic does not exceed 115% of the projected, external project traffic at buildout of the development, which would trigger a substantial deviation transportation analysis. Included in this report is a comparison between current actual project traffic (as of April 2014) and projected, external project traffic at buildout of the development, per the D.O. stipulation.

Kimley-Horn and Associates, Inc. (Kimley-Horn) was retained to conduct the traffic monitoring and NOPC studies for 2014. This report represents the first monitoring report conducted under the D.O. monitoring requirements outlined in Resolution 2009-237. Data collection was conducted during the month of April 2014.

Prior to undertaking this monitoring study, the scope of the NOPC transportation analysis and this year's traffic monitoring report was discussed and agreed upon with Charlotte County and Florida Department of Transportation (FDOT) staff. Documentation of these discussions, including methodology procedures, is provided in Appendix B.

Figure 1: Project Location Map



### STUDY AREA

The study area for this analysis, based on the agreed to methodology with Charlotte County staff and FDOT, was developed based upon requirements set forth in Resolution 2009-237, Section I, Condition 12. As identified in the methodology, a peak-hour turning movement counts at project driveway was initiated to verify that the previously approved external traffic thresholds for the development are not exceeded. Currently, one (1) individual project driveway/access point connects to the public roadway system on Kings Highway to the north of the Sandhill Boulevard/Kings Highway intersection. The study driveway location is currently an unsignalized intersection, with the driveway approach being stop-controlled. At project buildout, it is anticipated that one additional access point will be added along Kings Highway, as well as a connection to Kings Way Circle, resulting in a total of three (3) access points.

### **SUBSTANTIAL DEVIATION EVALUATION**

Based on discussion with Charlotte County staff, a technical trip generation analysis was conducted to compare the Sandhill DRI trips generated by the approved land uses to the land uses that are now proposed at the Sandhill DRI (specifically Tract 5). The focus of this technical analysis was to examine the proposed land uses now planned for Tract 5 in regards to triggering a substantial deviation. The transportation impacts of this site are regulated by Resolution 86-230 which states that an analysis is required to determine if changes (e.g. land use increases in Tract 5) would result in a substantial deviation in traffic from the site. Substantial deviation criteria are determined by Section 380.06, Florida Statue Subsection (b)10 which states that a substantial deviation shall result from "A 15 percent increase in the number of external vehicle trips generated by the development above that which was projected during the original development-of-regional impact review." This analysis compared the trips generated by the land uses originally approved for the Sandhill DRI to the approved plus proposed (for Tract 5) land uses.

### **APPROVED LAND USES**

Resolution 2009-237 indicates that the approved land uses for the Sandhill DRI include 2,231,334 square feet of retail space (ITE land use code 820), 2,600 multi-family dwelling units (ITE land use code 220), and a 120 room hotel (ITE land use code 310). The gross trips generated by these land uses are 6,318 total p.m. peak hour trips (3,281 inbound/3,037 outbound). Internal capture was assumed between the retail and residential (multi-family and hotel) land uses. Pass-by trips were assumed for the retail land use. Applying internal capture and pass-by to the gross trips results in the determination of net, new trips from the project site. The net, new external trips for the approved land uses are 3,848 total p.m. peak hour trips (2,046 inbound / 1,802 outbound). A more detailed breakdown of these trips included in the attached Table 1.

Table 1: Approved Land Uses P.M. Peak-Hour Project Trip Generation

ITE TRIP GENERATION CHARACTERISTICS					GROSS TRIPS			NET NEW EXTERNAL TRIPS		
Land Use	ITE Edition	ITE Code	Scale	ITE Units	In	Out	Total	In	Out	Total
Existing Approvals										
Shopping Center	9	820	2231,334	ksf	2,303	2,495	4,798	1,320	1,512	2,832
Apartment	9	220	2600	DU	941	507	1,448	701	267	968
Total	9	310	120	ROOM	37	35	72	25	23	48
					3,281	3,037	6,318	2,046	1,802	3,848

### PROPOSED LAND USES

The proposed development land uses in Tract 5 (Subtracts C through G) include 224 existing multi-family dwelling units, 516 proposed multi-family dwelling units and 150 independent living dwelling units. The land uses were analyzed using the Institute of Transportation Engineers' (ITE) *Trip Generation Manual*, 9<sup>th</sup> Edition, 2012. In order to provide a conservative analysis, these 890 total dwelling units were analyzed using the multi-family ITE land use code 220. Tract 5 (subtracts C through G) was originally approved for 864 multi-family dwelling units, and now 890 are proposed. This results in an increase of 26 dwelling units. This increase is applied to the originally approved 2,600 multi-family dwelling units resulting in (a total) of 2,626 multi-family dwelling units.

Tract 5 (Subtract H) was approved to contain 88,000 square feet of retail, but is proposed to contain 131,000 square feet of retail. This 43,000 square foot increase in retail results in (a total) of 2,274,334 square feet of retail to be analyzed.

Also proposed on Tract 5 is a 408 bed assisted living facility and a 50 bed memory care facility (both ITE land use code 254), a 430,000 square feet of industrial space (ITE land use code 110), and 30,000 square feet of office space (ITE land use code 710).

The gross trips expected to be generated by the (total) proposed land uses are 7,064 total p.m. peak-hour trips (3,409 inbound/3,655 outbound). Internal capture and pass-by capture were once again assumed resulting in the determination of net, new external trips. The net, new external trips for the approved land uses are 4,512 total p.m. peak

hour trips (2,133 inbound /2,379 outbound). A more detailed breakdown of these trips included in Table 2.

**Table 2: Sandhill DRI Approved Plus Proposed Land Uses Trip Generation – P.M. Peak Hour**

Land Use #	Land Use Type	Size	Units	Formula	Total Trips	Enter	Exit	Net New External Trips		
								Total	Enter	Exit
	<b>Approved + Proposed (Sandhill DRI)</b>									
220	Apartment	2626	DU	$T = 0.49(X) + 3.73$	1,462	950	512	1,001	651	350
820	Shopping Center	2274.33	KSF	$\ln(T) = 0.67\ln(X) + 3.31$	4,860	2,333	2,527	2,852	1,369	1,483
310	Hotel	120	Rooms	$T = 0.6(X)$	72	37	35	49	25	24
254	Assisted Living	458	Beds	$T = 0.22(X)$	101	44	57	69	30	39
110	General Light Industrial	430	KSF	$T = 1.43(X) - 157.36$	458	55	403	458	55	403
710	Office Building	30	KSF	$T = 1.12(X) + 78.45$	112	19	93	83	14	69
					7,085	3,438	3,627	4,512	2,144	2,368

### **APPROVED PLUS PROPOSED & SUBSTANTIAL DEVIATION CALCULATION**

The approved land uses generated a total of 3,848 P.M. peak hour trips and the approved plus proposed land uses generated a total of 4,512 P.M. peak hour trips. The approved plus proposed land uses generate an additional 664 P.M. peak hour trips. This change represents a 14.7% increase in trips from the original approval. This calculation is represented in the attached Table 3. This percent increase is less than the 15% requirement for a substantial deviation. Therefore, it is anticipated that the substantial deviation threshold has not been triggered.

**Table 3: Substantial Deviation Evaluation**

	Net New External Trips		
	In	Out	Total
<b>Approved</b>	2,013	1,835	3,848
<b>Approved + Proposed</b>	2,144	2,368	4,512
<b>Difference (Trips)</b>	131	533	664
<b>Percent Increase</b>	6.11%	22.51%	14.72%

### **SUMMARY OF SUBSTANTIAL DEVIATION**

The Sandhill DRI was approved for various land uses, but specific land uses in Tract 5 of the DRI are proposed to change. Therefore, a technical trip generation analysis was conducted to determine if the proposed land use changes result in a substantial



deviation, or a 15% increase in number of external trips generated from the site. The trip generation analysis determined that the land use changes result in an increase of 664 P.M. peak hour trips, or a 14.7% increase in trips. Therefore, it is anticipated that the substantial deviation threshold has not been triggered.

**ANNUAL TRAFFIC MONITORING REPORT**

The existing access to the project site is referred to in this report as the St. James Place Driveway. A summary of existing driveway peak season traffic volumes in the P.M. peak hour is shown in Table 4.

Table 4: Existing P.M. Peak Hour Project Driveway Volumes

Entering	Exiting	Total
21	25	46

For comparative purposes, a trip generation analysis was performed for the existing 224 condominium units, using the ITE *Trip Generation Manual*, 9<sup>th</sup> Edition, 2012, Land Use Code 231 Low-Rise Residential Condominium/Townhouse, which estimated a total of 175 trips (102 entering, 73 exiting). The difference between the trip generation estimate and the actual counts at the driveway are likely attributed to the occupancy of the development. Although both internal and pass-by capture trips are anticipated by the buildout of this project, these captured trips are likely not occurring at this time due to the limited diversity of land uses on-site. Thus, for the purposes of this monitoring report, the actual (observed) driveway trips are considered external (driveway) trips. It should be noted, however, that as the development builds out over time, the issue involving internal and pass-by capture trips may need to be re-addressed in later reports.

A comparison of the buildout trip estimate with the actual (observed) project driveway volumes previously shown in Table 4 indicates that the current project driveway volumes are approximately three percent (3%) of the estimated external project traffic at buildout. This comparison is provided in Table 5.

Trip generation estimates of P.M. peak-hour total project trips for buildout conditions of the project were compared to the total project driveway volumes determined in the previous section of this report for the purposes of a substantial deviation determination.

Table 5: P.M. Peak Hour, External Project Trip Generation Comparison

Existing Development Volumes			Estimated Buildout Development Volumes		
Entering	Exiting	Total	Entering	Exiting	Total
21	25	46	1,500	596	904

Source: ITE, Trip Generation Manual, 9<sup>th</sup> Edition, 2012 for "Estimated Buildout Development Volumes"  
QC 2014 traffic counts for "Existing Development Volumes"

Based upon the volume comparison presented above, it has been shown that the actual project driveway volumes are significantly lower than the trip generation estimates for the buildout development levels of the Sandhill DRI (Tract 5). Therefore, the current project driveway volumes do not constitute a substantial deviation for the Sandhill DRI, Tract 5.

**NOTICE OF PROPOSED CHANGE (NOPC) TRANSPORTATION ANALYSIS*****NOPC STUDY AREA***

In addition to the study driveway location, the following intersections and roadways are included in the study area for the NOPC transportation analysis, as directed by Charlotte County and FDOT staff:

**Significantly Impacted Regional Roadways**

- Kings Highway from I-75 to Villages of DeSoto Second Entrance
- Veterans Boulevard (Kenilworth-Hillsborough Boulevard) from US 41 to Harbor Boulevard
- Veterans Boulevard (Kenilworth-Hillsborough Boulevard) from Harbor Boulevard to Loveland Boulevard
- Veterans Boulevard (Kenilworth-Hillsborough Boulevard) from Loveland Boulevard to Kings Highway

**Significantly Impacted Local Roads**

- Sandhill Boulevard (East Peachland Boulevard) from Kings Highway to Rio De Janerio Avenue
- Rampart Boulevard from Kings Highway to Rio De Janerio Avenue

**Significantly Impacted Regional Intersections**

- Kings Highway at Sandhill Boulevard (East Peachland Boulevard)
- I-75 Ramps at Kings Highway

**Data Collection**

Traffic data were collected by Quality Counts, LLC (QC) at each of the following study intersections:

- Kings Highway at St. James Place
- Kings Highway at Sandhill Boulevard (signalized)
- Kings Highway at I-75 northbound ramps (signalized)
- Kings Highway at I-75 southbound ramps
- Kings Highway at Rampart Boulevard (signalized)
- Rampart Boulevard at Capricorn Boulevard

Each study location was counted from 4:00 P.M. to 6:00 P.M. on a weekday as outlined in the study methodology, with volumes recorded in 15-minute intervals. The turning movement counts were undertaken during the month of April 2014.

The raw, total traffic volumes at each study location are provided in Appendix C. A review of the counts indicated that, in general, the time period between 5:00 P.M. to 6:00 P.M. was the highest combined one-hour period of vehicles entering and exiting the project site. Therefore, the volumes associated with this one hour (5:00 P.M. to 6:00 P.M.) time period were used as the P.M. peak-hour volumes for this study.

Since the counts were undertaken in the first part of April, typically one of the peak months of the year, the appropriate peak season factor was obtained from FDOT and used to adjust the raw counts for peak season variations. A summary of the intersection peak season turning movement volumes is shown in Figure 2.

Figure 2: Existing Peak Season P.M. Peak Hour Traffic Volumes

Sandhill DRI, Tract 5  
Charlotte County, FL

### Roadway and Intersection Analysis

As part of this analysis, the traffic count data collected was utilized to determine if Level of Service (LOS) D conditions are being exceeded at the identified Significantly Impacted Regional Roadways, Local Roads, and Regional Intersections for both existing and buildout conditions.

### Existing Conditions

A roadway segment analysis was performed for the study area roadways under existing conditions. For the purposes of this study, these links were split into multiple sub links based on key intersections and existing/proposed site driveways. Overall, it was determined that all of the segments are currently under the LOS D threshold, however, the volume on the segment of Kings Highway from Sandhill Boulevard to the DeSoto County line is approaching the LOS D capacity. The results of the existing conditions link analysis are shown in Table 6.

Table 6: Sandhill DRI (Tract 5) Existing P.M. Peak Hour Roadway Link Analysis

LOS Report ID	Roadway	From	To	Fun. Class	Lanes, Divided/ Undivided?	2013 AADT	Est. 2013 Pk. Hr. Two-Way Vol. (AADT*4)	LOS D Cap. (Pk. Hr. Two-Way Vol.)	Vol. from 2014 TMCs	PM Pk. Hr. Two-Way Vol.	Existing Traffic % of LOS D Capacity
273	Kings Highway	U.S. 41	Harborview Rd.	MA	4/D	9,824	866	3,204	-	866	27%
52	Kings Highway	Harborview Rd.	Westchester Blvd.	MA	4/D	13,725	1,235	3,204	-	1,235	38%
112	Kings Highway	Westchester Blvd.	Rampart Blvd.	MA	4/D	20,043	1,804	3,204	1,884	1,884	59%
		Rampart Blvd.	Veterans Blvd.	MA	4/D	20,043	1,804	3,204	2,044	2,044	64%
		Veterans Blvd.	I-75 SB Ramps	MA	4/D	27,057	2,435	3,204	2,044	2,044	64%
307	Kings Highway	I-75 SB Ramps	I-75 NB Ramps	MA	4/D	27,057	2,435	3,204	2,427	2,427	76%
		I-75 NB Ramps	Sandhill Blvd.	MA	4/D	27,057	2,435	3,204	2,126	2,126	66%
		Sandhill Blvd.	Site Driveway S	MA	2/U	13,804	1,224	1,440	922	922	64%
		Site Driveway S	St. James Place Driveway	MA	2/U	13,804	1,224	1,440	1,017	1,017	71%
103	Kings Highway	St. James Place Driveway	Kingsway Cir.	MA	2/U	13,804	1,224	1,440	1,034	1,034	72%
		Kingsway Cir.	DeSoto Co Line	MA	2/U	13,804	1,224	1,440	1,034	1,034	72%
190	Rampart Blvd.	Kings Highway	I-75	L	2/U	10,972	887	1,332	984	984	75%
107	Sandhill Blvd.	Kings Highway	Deep Creek Blvd.	UC	2/U	14,706	1,324	1,332	985	985	74%
108	Sandhill Blvd.	Deep Creek Blvd.	Rio De Janeiro Ave.	UC	2/U	5,188	467	1,332	-	467	35%
87	Veterans Blvd.	U.S. 41	Murdock Circle	MA	4/D	16,665	1,500	3,204	-	1,500	47%
278	Veterans Blvd.	Murdock Circle	Cochran Blvd. (a.k.a. Toledo Blade)	MA	4/D	19,999	1,800	3,204	-	1,800	56%
280	Veterans Blvd.	Cochran Blvd. (a.k.a. Toledo Blade)	Harbor Blvd.	MA	4/D	17,456	1,571	3,204	-	1,571	49%
24	Veterans Blvd.	Harbor Blvd.	Loveland Blvd.	MA	4/D	14,353	1,292	3,204	-	1,292	40%
256	Veterans Blvd.	Loveland Blvd.	Kings Highway	MA	4/D	14,213	1,279	3,204	-	1,279	40%

Denotes Charlotte County Link that was split for this analysis  
 - Denotes location where no 2014 count data was collected

Additionally, an arterial LOS and intersection LOS analyses were performed using Trafficware's *Synchro 8* software. All *Synchro 8* reports for this analysis are included in Appendix E. The arterial roadway analysis analyzes the quality of traffic flow along a signalized facility based on travel speed. For this study, it was found that the segments

operate at acceptable levels of service under the existing conditions. The results of the existing conditions intersection analysis are provided in Table 7.

Table 7: Existing P.M. Peak Hour Traffic Intersection Level of Service Results

	Overall		EB		WB		NB		SB	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>Signalized Intersections</i>										
Kings Hwy & Sandhill Blvd	44.7	D	29.2	C	54.0	D	45.0	D	50.3	D
Kings Hwy & I-75 NB Ramps	11.2	B	-	-	26.2	C	5.3	A	8.9	A
Kings Hwy & Rampart Blvd	23.6	C	44.0	D	40.7	D	18.2	B	16.8	B
Rampart Blvd & Capricorn Blvd	13.5	B	15.1	B	12.0	B	11.5	B	11.5	B
<i>Unsignalized Intersections</i>										
Kings Hwy & St. James Place Dwy	0.5	A	13.5	B	-	-	-	-	-	-
Kings Hwy & I-75 SB Ramps	0.5	A	-	-	-	-	-	-	27.1	C

As shown in Table 7, the intersections in the study area operate at acceptable levels of service under existing traffic conditions. However, it should be noted that the intersection of Kings Highway and Sandhill Boulevard was found to operate at LOS D.

#### Buildout Conditions

External traffic estimates for development buildout conditions (for all uses on-site) were estimated using information contained in the ITE *Trip Generation Manual*, 9th Edition, 2012, for the appropriate land uses, intensities, and associated land use codes. Additionally, internal capture and pass-by trips were estimated for the project buildout using the methods described in ITE's *Trip Generation Handbook*, 2<sup>nd</sup> Edition, 2004. Based on the proposed land uses, it was estimated that the net new external trip generation at buildout will be 1,500 external, two-way trips during the P.M. peak hour (596 enter, 904 exit). This estimate is documented in Appendix D. Project trip distribution was determined utilizing the latest Florida Standard Urban Transportation Modeling Structure (FSUTMS) Sarasota Manatee Charlotte (SMC) model. These distribution percentages were applied to the project traffic to determine project traffic volumes at each driveway, intersection, and segment within the study area. A summary of the project trip distribution percentages is shown in Figure 3. The trip distribution percentages were then applied to the entering and exiting project traffic to determine P.M. peak hour project traffic assignment, which is shown in Figure 4. Once the project



traffic values were estimated, they were added onto the existing traffic volumes to determine total buildout traffic, shown in Figure 5.

### Figure 3: Project Trip Distribution

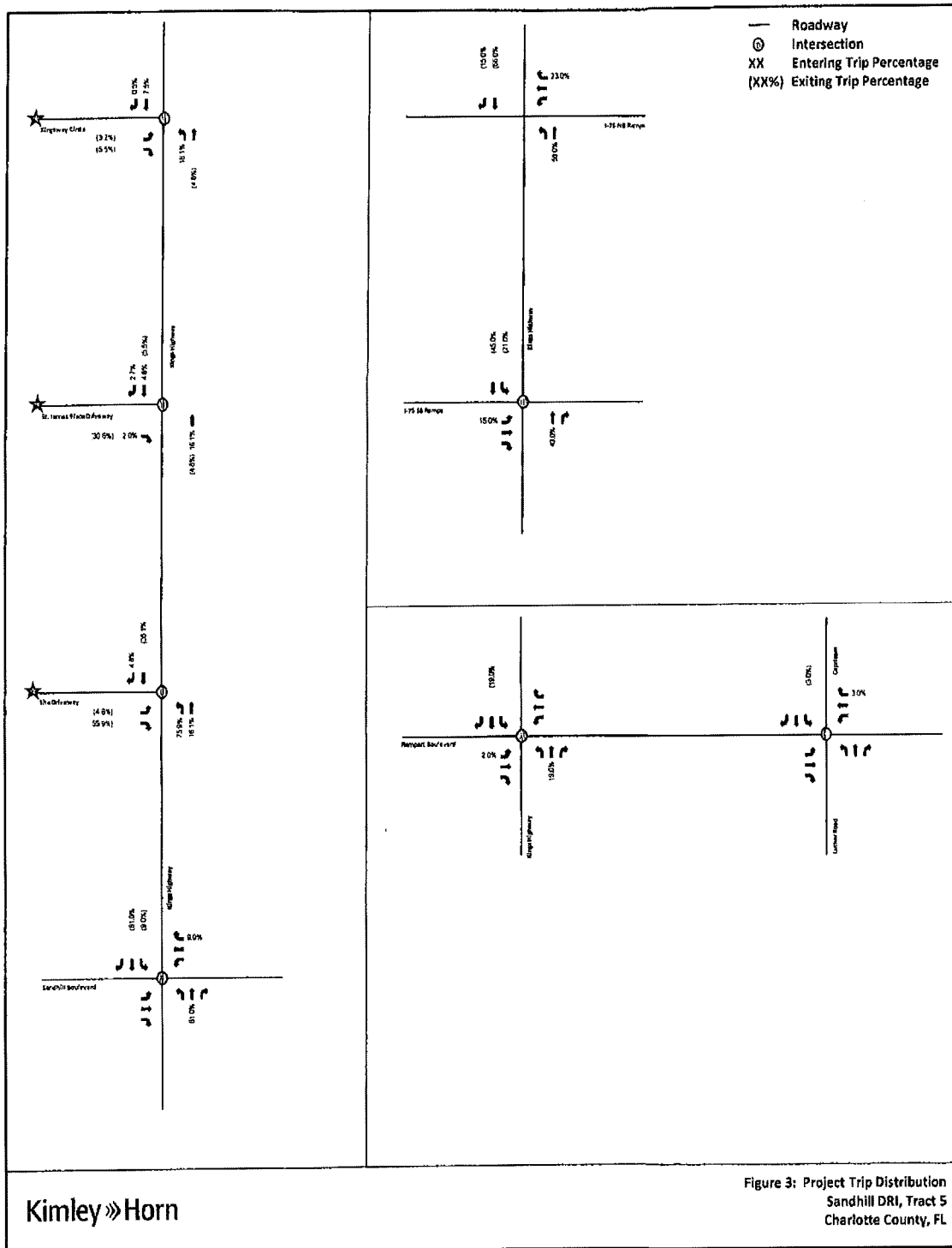


Figure 4: Project Buildout P.M. Peak Hour Traffic Volumes

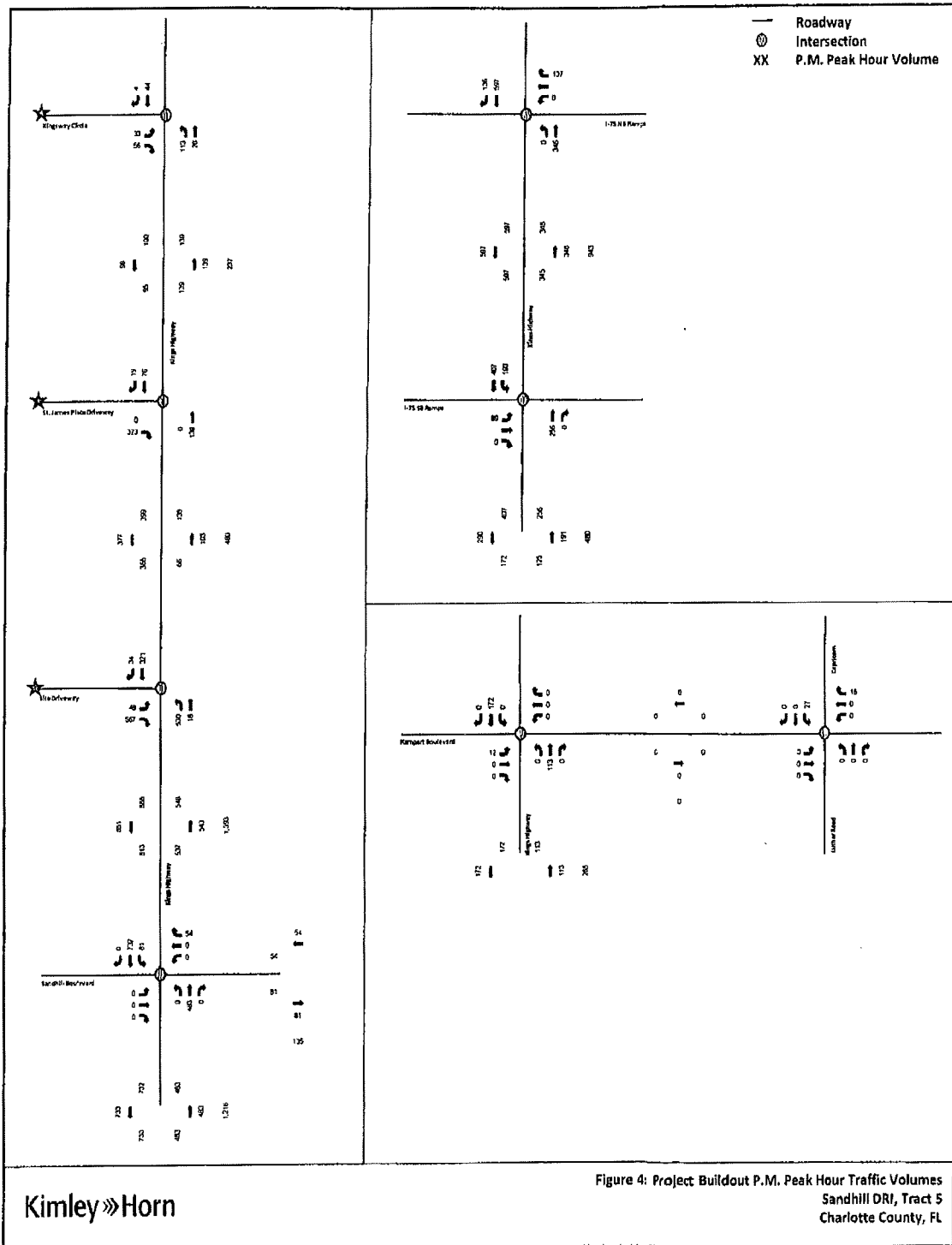
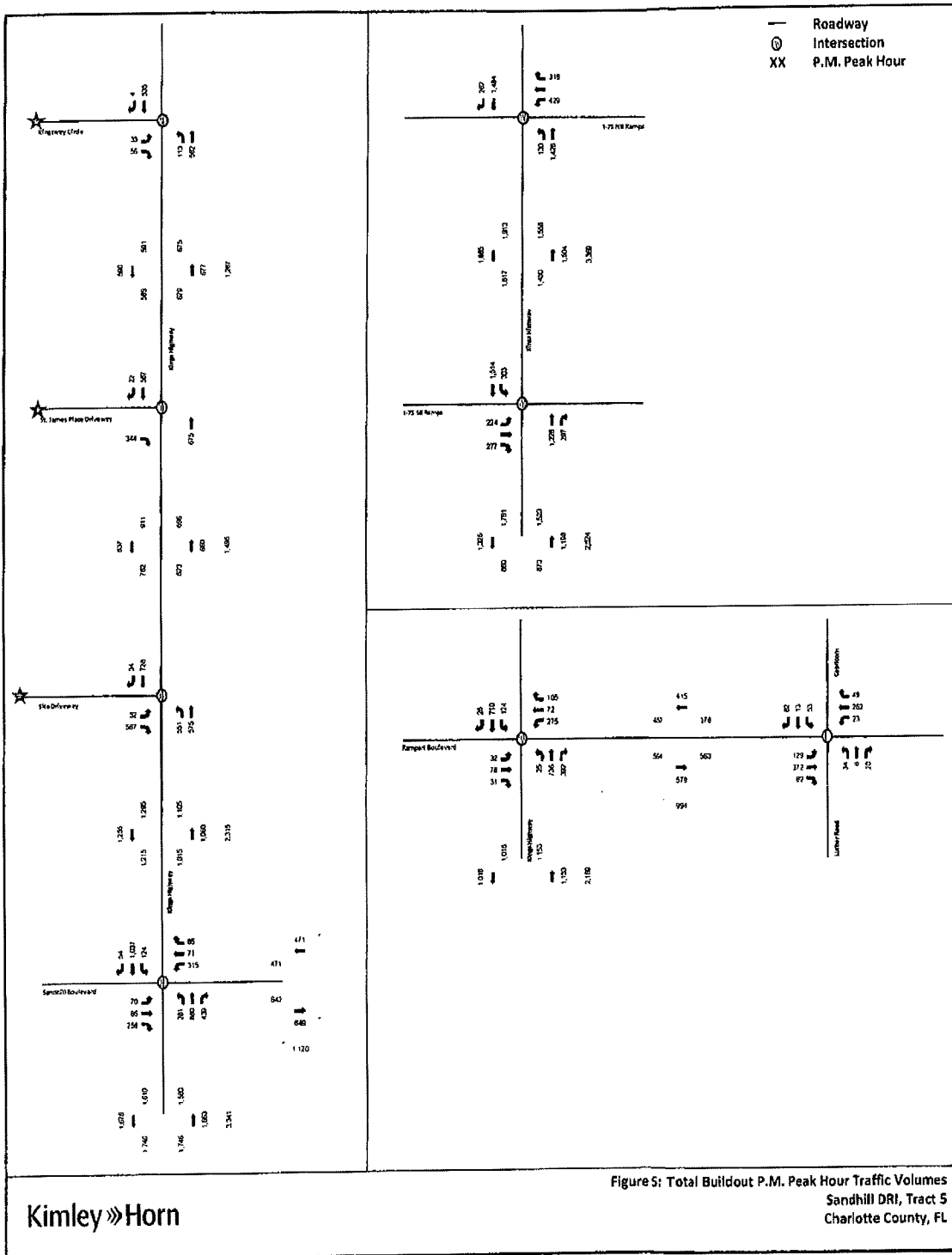


Figure 5: Total Buildout P.M. Peak Hour Traffic Volumes



In addition, an analysis was conducted to determine if the project utilizes more than five percent (5%) of the LOS D capacity on the specified roadways, as well as to identify any segments on which the total traffic exceeds the LOS D capacity. Project traffic impacts were analyzed using the LOS D service volume capacities obtained from *Charlotte County: Roadway Level of Service Data*. Overall, it was determined that project traffic exceeds five percent (5%) of the LOS D capacity on seven (7) Charlotte County roadway segments in the study area, and total traffic exceeds the LOS D capacity on two (2) roadway segments. The two segments that were found to exceed capacity are Kings Highway from Veterans Boulevard to Sandhill Boulevard, and Kings Highway from Sandhill Boulevard to the DeSoto County Line. For the purposes of this study, these links were split into multiple sub links based on key intersections and existing/proposed site driveways. The results of this analysis are shown in Table 9.

Similar to the existing conditions analysis, Trafficware's *Synchro 8* software was used to analyze buildout total traffic conditions. As with the existing conditions analysis, arterial LOS analyses were performed for the buildout conditions. It was determined that the arterial LOS exceeds LOS D on the segments of Kings Highway from the I-75 NB Ramps to Sandhill Boulevard. However, the analysis was based on existing traffic signal timing plans, and the level of service would likely improve if signal timing optimizations are made. For the buildout conditions at the intersections, the two (2) proposed additional access points along Kings Highway were analyzed; one to the south of the existing access point, and one to the north of the existing access via Kingsway Circle. The results of the buildout conditions intersection traffic analysis are included in Table 8.

Table 8: Buildout P.M. Peak Hour Traffic Intersection Level of Service Results

	Overall		EB		WB		NB		SB	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<i>Signalized Intersections</i>										
Kings Hwy & Sandhill Blvd	38.4	D	47.8	D	56.7	E	32.3	C	36.1	D
Kings Hwy & I-75 NB Ramps	16.5	B	-	-	46.5	D	7.0	A	11.5	B
Kings Hwy & Rampart Blvd	23.4	C	44.7	D	41.7	D	19.0	B	16.3	B
Rampart Blvd & Capricorn Blvd	13.6	B	15.1	B	12.0	B	11.9	B	12.0	B
<i>Unsignalized Intersections</i>										
Kings Hwy & St. James Place Dwy	6.8	A	31.6	C	-	-	-	-	-	-
Kings Hwy & I-75 SB Ramps	1.8	A	-	-	-	-	-	-	67.4	E
Kingsway Cir	2.4	A	24.4	C	-	-	-	-	-	-
Site Dwy & Kings Hwy	159.1		626.9		-	-	-	-	-	-

Overall, all intersections were found to operate at LOS D or better during the P.M. peak hour, with the exception of the new access point unsignalized intersection to the south of the existing access at the St. James Place Driveway. As this intersection is anticipated to be unsignalized and serve the majority of the project traffic (including all of the industrial traffic for the site) it was found to operate at LOS F.

Table 9: Sandhill DRI (Tract 5) Roadway Link Analysis

LOS Report ID	Roadway	From	To	Lanes, Divided/Undivided	Fun. Class	2013 ADIT	Est. 2013 Pl. Hr. Two-Way Vol. (AADT-K)	LOS D Cap. Pl. Hr. Two-Way Vol.	Vol. from 2014 TMCs	PM Pl. Hr. Two-Way Vol.	% Project Traffic	Project Trips	% of LOS D Capacity	Study Area	Total Traffic Exceeds LOS D?	Proposed Lanes	New LOS D Capacity	Total Traffic Exceeds new LOS D Capacity?
273	Kings Highway	U.S. 41	Heronview Rd.	4/D	MA	9,624	865	3,204	-	865	4.4%	56	2.1%	N	932			
52	Kings Highway	Heronview Rd.	Westchester Blvd.	4/D	MA	13,725	1,235	3,204	-	1,235	6.8%	59	3.1%	N	1,334			
112	Kings Highway	Westchester Blvd.	Rampart Blvd.	4/D	MA	20,043	1,804	3,204	1,884	1,884	16.8%	252	7.9%	Y	2,136			
		Rampart Blvd.	Veterans Blvd.	4/D	MA	20,043	1,804	3,204	2,044	2,044	22.4%	336	10.5%	Y	2,380			
307	Kings Highway	Veterans Blvd.	775 S8 Ramps	4/D	MA	27,057	2,435	3,204	2,044	2,044	45.4%	661	21.3%	N	2,725			
		775 S8 Ramps	775 N8 Ramps	4/D	MA	27,057	2,435	3,204	2,427	2,427	66.4%	996	31.1%	Y	3,423		6	4,880
		775 N8 Ramps	Sandhill Blvd.	4/D	MA	27,057	2,435	3,204	2,126	2,126	80.6%	1,209	37.7%	Y	3,335		6	4,880
		Sandhill Blvd.	Star Driveway S	2/U	MA	13,694	1,224	1,440	922	922	52.6%	1,352	96.7%	Y	2,314		4	3,204
103	Kings Highway	Star Driveway S	St. James Place Driveway	2/U	MA	13,694	1,224	1,440	1,017	1,017	32.0%	480	33.3%	Y	1,497		4	3,204
		St. James Place Driveway	Kingsway Ctr.	2/U	MA	13,694	1,224	1,440	1,034	1,034	15.8%	237	16.5%	Y	1,271			
190	Rampart Blvd.	Kingsway Ctr.	275	2/U	MA	13,694	1,224	1,440	1,034	1,034	4.9%	74	5.1%	Y	1,108			
107	Sandhill Blvd.	Kings Highway	275	2/U	MA	13,694	1,224	1,440	984	984	0.0%	0	0.0%	N	994			
108	Sandhill Blvd.	Kings Highway	275	2/U	MA	13,694	1,224	1,440	984	984	0.0%	0	0.0%	N	994			
87	Veterans Blvd.	Deep Creek Blvd.	Deep Creek Blvd.	2/U	UC	10,972	897	1,332	985	985	9.5%	143	10.7%	Y	1,128			
		Deep Creek Blvd.	Richards Lane Dr.	2/U	MA	5,188	467	1,332	-	467	3.8%	57	4.3%	N	524			
278	Veterans Blvd.	Murdoch Circle	Cochran Blvd. (a.k.a. Toledo Blade)	4/D	MA	19,989	1,300	3,204	-	1,500	6.0%	90	2.8%	N	1,590			
280	Veterans Blvd.	Cochran Blvd. (a.k.a. Toledo Blade)	Cochran Blvd.	4/D	MA	19,989	1,300	3,204	-	1,500	6.3%	125	3.9%	N	1,525			
24	Veterans Blvd.	Harbor Blvd.	Harbor Blvd.	4/D	MA	17,456	1,571	3,204	-	1,800	1.5%	173	5.4%	Y	1,744			
256	Veterans Blvd.	Loveland Blvd.	Loveland Blvd.	4/D	MA	14,353	1,292	3,204	-	1,292	15.3%	230	7.2%	Y	1,522			
		Loveland Blvd.	Kings Highway	4/D	MA	14,213	1,279	3,204	-	1,279	20.5%	345	10.8%	Y	1,624			

Denotes Charlotte County Link that was split for this analysis  
 Denotes location where no 2014 count data was collected  
 Denotes greatest trip distribution percentage if multiple exist on model link

### **Mitigation of Project Traffic Analysis**

The results of this analysis were used to identify potential traffic mitigation that may need to be addressed as part of the transportation approval process. Based on the results of the buildout traffic conditions analysis, it was determined that the following improvements will be necessary to maintain acceptable levels of service:

- Traffic signal optimization at all signalized intersections
- Kings Highway – Widen to six (6) lanes from I-75 SB Ramps to Sandhill Boulevard
- Kings Highway – Widen to four (4) lanes from Sandhill Boulevard to the St. James Place Driveway
- Signalize the intersection of the proposed site driveway to the south of the St. James Place driveway
- Signalize the Kings Highway/I-75 SB Ramps intersection

Trafficware's *Synchro 8* software was used to perform an intersection LOS analysis after the improvements have been made. The results of the total buildout traffic plus improvements analysis is shown in Table 10.

**Table 10: Buildout P.M. Peak Hour Total Traffic + Improvements Intersection Level of Service Results**

	Overall		EB		WB		NB		SB	
	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
<b>Signalized Intersections</b>										
Kings Hwy & Sandhill Blvd	37.7	D	47.7	D	56.6	E	30.7	C	36.1	D
Kings Hwy & I-75 NB Ramps	13.5	B	-	-	39.3	D	5.3	A	9.1	A
Kings Hwy & Rampart Blvd	23.4	C	44.7	D	41.7	D	19.0	B	16.3	B
Rampart Blvd & Capricorn Blvd	13.6	B	15.1	B	12.0	B	11.9	B	12.0	B
Site Dwy & Kings Hwy	23.2	C	32.7	C	-	-	17.0	B	24.8	C
Kings Hwy & I-75 SB Ramps	13.7	B	17.9	B	-	-	21.1	C	8.1	A
<b>Unsignalized Intersections</b>										
Kings Hwy & St. James Place Dwy	6.8	A	31.6	C	-	-	-	-	-	-
Kingsway Circle	2.4	A	24.4	C	-	-	-	-	-	-

As shown in Table 10, all study intersections are anticipated to operate with overall acceptable LOS under buildout conditions if the necessary improvements are made.



## CONCLUSIONS

Based upon the monitoring requirements set forth by Charlotte County, traffic counts were conducted at the existing project driveway and other identified roadways and intersections in the vicinity of the Sandhill DRI (Tract 5). In addition, based upon a trip generation analysis for buildout conditions, external (driveway) trip generation volumes for the buildout development levels for the DRI were compared to the existing, external project driveway volumes. The results of this comparison indicated that existing, external project driveway volumes are significantly lower than the external (driveway) trip estimates for the buildout conditions of the Sandhill DRI, Tract 5. In view of the above findings, the current external project driveway volumes do not constitute a substantial deviation for the Sandhill DRI, Tract 5.

Additionally, the NOPC transportation analysis identified that the following improvements will be necessary to maintain acceptable levels of service at project buildout:

- Traffic signal optimization at all signalized intersections
- Kings Highway – Widen to six (6) lanes from I-75 SB Ramps to Sandhill Boulevard
- Kings Highway – Widen to four (4) lanes from Sandhill Boulevard to the St. James Place Driveway
- Signalize the intersection of the proposed site driveway to the south of the St. James Place driveway
- Signalize the Kings Highway/I-75 SB Ramps intersection

## **APPENDIX A:**

# **Development Order Monitoring Conditions**

invoices to County. The invoices shall be subject to review and verification by the County Engineer. Impact fee credits shall be issued by County within thirty (30) days of submission of each monthly invoice. Any amounts that remain uncredited following said 30 day period shall bear interest at the prime rate published from time to time by Wells Fargo Bank.

Road impact fee credits shall only be applied to offset the road impact fees due for development of the Charlotte Commons Parcels and shall not expire. The road impact fee obligation for the Charlotte Commons Parcels shall be equal to the total cost of the design, permitting, construction and construction management of the Improvements including interest costs of any construction loan.

If the Improvements are provided as detailed herein, the Charlotte Commons Parcels shall be deemed vested to construct 514,500 square feet of commercial/retail uses, consistent with any subsequently approved Final Detail Plan.

- (d) Monitoring – The timing for the initiation of the improvements outlined in Condition 12 (b) above shall be made at the time that a road segment or intersection is projected to exceed the level of service standard adopted in the local comprehensive plan. To determine the existing and projected levels of service on regional and local facilities in need of improvements in a timely manner, the Sandhill DRI through the Sandhill MSTU/BU shall submit a biennial monitoring report to Charlotte County, FDOT, the Florida Department of Community Affairs and the Southwest Florida Regional Planning Council for review and approval. This first monitoring report shall be submitted one year after the issuance of this development order for the Sandhill DRI Substantial Deviation and every two years thereafter until after buildout of the project in year 2012.

At a minimum, the report shall contain p.m. peak hour trip generation estimates and turning movements at each of the access intersections and the off-site

intersections listed above in Condition 12 (b)(2), and a calculation of the peak season peak hour level of service at these intersections and on the road segments indicated above Condition 12 (b)(1). The levels of service shall be calculated according to current professional standards. Prior to submitting each biennial monitoring report, the property owners shall coordinate with the reviewing agencies to review the methodology. The applicant will furnish all traffic analysis in a format compatible with Charlotte County's Comprehensive Plan, Traffic Element, Policy 1.1 and Charlotte County's Concurrency Management System; that is traffic data in the format of "Average Daily Trips" and "Peak Season/Peak Hour".

The biennial monitoring report shall, in addition to current counts and traffic information, provide a projection of project traffic for the following year to be based on anticipated construction for the same period of one year on all of the above listed regional roads and intersections. The projection will include traffic generated by all of the completed project development, all of the portion of the project for which building permits have been issued, and the amount of project development for which the property owners intend to seek building permits in the following year. Also, the biennial monitoring report should indicate the status of those road improvements from the County's Capital Improvements Element that were assumed to be committed for this analysis.

- (e) If the analysis from the biennial monitoring report indicates that any of the identified roadways now exceeds or will exceed during the next year the level of service standards adopted by the County and the project is utilizing or is projected to utilize more than 5% of the level of service "D" capacity for urban areas or "C" for rural areas, then further building permits shall not be granted, with the exception of building permits for up to 514,500 square feet of commercial retail or less intense development on parcels C-21, C-25 and C-1 within Tract 1 as shown on Revised Map H, until the standards of the County's concurrency management system have been met and the affected roadway improvement, as identified in this

Development Order, is listed as committed for construction based on the criteria listed below.

No building permits for developments beyond those projected in the biennial monitoring report shall be issued until the next biennial monitoring report with projections is performed.

A committed roadway improvement for the purpose of meeting the requirements of Section 380.06(15) (e)2., Florida Statutes, shall be recognized as either:

- 1) A roadway improvement scheduled for construction to commence in or before the first year of the appropriate local government's Comprehensive Plan capital improvement element. A roadway improvement scheduled for construction to commence in or before the third year of Charlotte County's Comprehensive Plan capital improvements element will be recognized as a committed roadway improvement; with no additional amendment to this Development Order required, when Charlotte County amends its adopted comprehensive plan and the comprehensive plan amendment is found to be in compliance by final agency action with Rule 9J-5.0055(2)(c), Florida Administrative Code, except insofar as (2)(c) would allow concurrency to be satisfied by using the provision in Rule 9J-5.0055(2)(a)1. - 4, Florida Administrative Code or Rule 9J-5.0055(2)(b)1. and 2., Florida Administrative Code.
- 2) A roadway improvement scheduled for construction within the first three years of the Florida Department of Transportation's Five Year Work Program; or

- 3) Any alternative agreed upon by the Charlotte County, SWFRPC, FDCA, and the property owners in Sandhill. The property owners have the right to propose as an alternative, the use of a Local Government Development Agreement pursuant to Section 163.3220, Florida Statutes, which contains commitments by the property owners (potentially including a proportionate share payment) and the local government to provide the necessary improvements which ensures concurrency on all significantly impacted regional and local roads and intersections. As an alternative, the MSTU/BU may provide the necessary improvements pursuant to the above described agreement. Any agreed upon alternative shall be incorporated into this Development Order by amendment pursuant to the procedures set forth in Section 380.06(19), Florida Statutes.
- (f) The location of individual access points to the project shall be determined in consultation with the County Engineer's Department prior to submission of detail plans for approval; access points and curb cuts onto public roads shall be minimized and arterial and collector roads within the project should be constructed to minimize the need for offsite circulation, and an interior roadway and frontage road concept should be utilized within the commercial and research and development areas to enable access to adjoining development without accessing existing streets.
- (g) Parcel C-22 (Parcel 4 in Comprehensive Plan Amendment) shall not have direct access onto Kings Highway; Parcel C-13 (Parcel 5 in Comprehensive Plan Amendment) shall be allowed access in compliance with the Charlotte County Access Management Ordinance; Parcel C-25 shall have direct access onto Loveland Boulevard, however all truck access from Parcel C-25 onto Loveland Boulevard shall be prohibited.

## **APPENDIX B:**

# **Transportation Methodology Correspondence**



Kimley-Horn  
and Associates, Inc.

March 21, 2014

Mr. Venkat Vattikuti, P.E., PTOE  
Charlotte County Planning & Zoning Division  
18400 Murdock Circle  
Port Charlotte, Florida 33948

■  
Suite 150  
655 North Franklin Street  
Tampa, Florida  
33602

Mr. Lawrence Massey  
FDOT – District One  
2295 Victoria Avenue, Suite 292  
Ft. Myers, Florida 33901

**Re: Sandhill Development of Regional Impact (DRI)  
Interstate 75 & Kings Highway  
Charlotte County, Florida  
Transportation Study Methodology**

Dear Mr. Vattikuti and Mr. Massey:

The purpose of this letter is to document the methodology conference call held on Thursday, January 30, 2014 for the Transportation Study Methodology with regards to the Sandhill DRI, specifically Tract 5. This letter shall also document the methodology e-mails from Charlotte County sent on February 11, 2014 and March 10, 2014. The proposed methodology as discussed is provided below.

The Client, ATM II, LLC, is seeking an increase in specific land uses for Tract 5 of the Sandhill DRI. Tract 5 of the Sandhill DRI is anticipated to be comprised of the following land uses:

- 890 residential units (or an equivalent to this, including medical beds) of which 224 exist today (an increase of 26 mutli-family dwelling units)
- Up to 131,000 Square Feet of retail (an increase of 43,000 square feet)
- 408 bed assisted living facility (an increase of 408 beds)
- 50 bed memory care facility (an increase of 50 beds)
- 480,000 Square Feet of industrial space (an increase of 480,000 square feet).



**Annual Report Data Collection**

Traffic counts will be collected at the following locations, as directed by Charlotte County according to Resolution 2009-237 pages 10-12, in their correspondence on March 10, 2014, during the p.m. peak-hour period (4:00 p.m. to 6:00 p.m.):

**Existing Access Points to the Project**

- To Be Determined with Charlotte County staff

**Significantly Impacted Regional Roadways**

- King's Highway from I-75 to Villages of DeSoto Second Entrance
- Kenilworth-Hillsborough Boulevard from US 41 to Harbor Boulevard
- Kenilworth-Hillsborough Boulevard from Harbor Boulevard to Loveland Boulevard
- Kenilworth-Hillsborough Boulevard from Loveland Boulevard to King's Highway

**Significantly Impacted Local Roads**

- Sandhill Boulevard (East Peachland Boulevard) from King's Highway to Rio De Janerio
- Rampart Boulevard from King's Highway to Rio De Janerio

**Significantly Impacted Regional Intersections**

- King's Highway at Sandhill Boulevard (East Peachland Boulevard)
- I-75 Ramps at King's Highway

A field review will be conducted to determine roadway and traffic characteristics of the roadway network segments identified above.

**Annual Report Roadway and Intersection Analysis**

As directed by Charlotte County staff in Resolution 2009-237 page 17, in their correspondence on March 10, 2014, the traffic count data collected, detailed above, will be utilized to determine if Level of Service (LOS) D (Charlotte County standard LOS) conditions are being exceeded at the identified Significantly Impacted Regional Roadways, Local Roads, and Regional Intersections.

In addition, an analysis will be conducted to determine if the project is utilizing more than 5% of the LOS D capacity on urban roadways and LOS C capacity on rural roadways.

**Annual Report Traffic Submittal**

The results of the data collection and roadway and intersection analysis will be submitted in an annual monitoring report. The report will contain traffic counts taken at the access points to the site, traffic counts on the road segments previously identified, and turning movements to each of the intersections previously identified.



As part of the report, outstanding improvements (links and intersections) will be listed per Resolution 86-230 as specifically identified by Charlotte County staff in their correspondence on February 11, 2014.

A traffic report will be submitted to Charlotte County and the Florida Department of Transportation.

#### **Mitigation of Project Traffic Analysis**

A trip generation analysis will be undertaken for the project land use scenario (as identified in Resolution 2009-237). The distribution and assignment of project traffic for the buildout conditions will be based upon the results of a run of the Florida Standard Urban Transportation Model Structure (FSUTMS) program utilizing the Sarasota-Manatee-Charlotte (SMC) model, and refined based upon existing and future roadway travel patterns in the area.

Based upon direction from the County, who has stated they are not looking for the developer to complete all the outstanding obligations, but are requesting the developer "mitigate the impact of the development at the following key links/intersection within the vicinity of your proposed development", the following locations will be evaluated:

1. Sandhill Boulevard Widening: Kings Highway to Deep Creek Boulevard: 4 lanes (2 additional lanes)
2. Kings Highway Widening: Desoto County line to Sandhill Boulevard: 4 lanes (2 additional lanes)
3. Kings Highway @ Sandhill Boulevard Intersection: Signalization/turn lanes
4. I-75 Ramps @ Kings Highway: Signalization/turn lanes.

These locations are detailed in the attached map.

A "mitigation analysis" will be conducted for both the identified intersections and roadway segments based upon the following methodology:

- Conduct an "Existing Conditions" Intersection or Roadway Analysis based upon the data collected
- Conduct a "With Proposed Project Traffic Conditions" Intersection or Roadway Analysis based upon Existing plus Project Traffic Volumes
- Identify what improvements may be needed to maintain the required level of service
- Conduct a Proportionate Share Analysis for these improvements (Per House Bill 7207 – The Community Planning Act)

The results of the analysis will identify potential traffic mitigation (and possible proportionate share costs) that may need to be addressed as part of the transportation approval process. Based upon the results of the analysis, a traffic



Kimley-Horn  
and Associates, Inc.

Mr. Vattikuti and Mr. Massey  
March 21, 2014  
Page 4

report will be submitted to Charlotte County and the Florida Department of Transportation.

Please let me know if you have any questions during your review, and we will be happy to answer them. Thank you again for your time regarding this matter.

Very truly yours,

**KIMLEY-HORN AND ASSOCIATES, INC.**

Christopher C. Hatton, P.E.  
Senior Vice President

CC: Art Marrero (Marrero Group)  
Matt Mootz (ATM II, LLC)  
Geri Waksler (McCrary Law Firm)  
Peter Vanbuskirk (Kimley-Horn and Associates, Inc.)

[illegible]

<sup>†</sup>*Notes:* Sources: Esri, DeLorme, NAVTEQ, USGS, Intermap, iPC, NRCAN, Esri Japan, METI, Esri China (Hong Kong), Esri (Thailand), TomTom, 2013

**Kimley-Horn  
and Associates, Inc.**





*Florida Department of Transportation*

RICK SCOTT  
GOVERNOR

605 Suwannee Street  
Tallahassee, FL 32399-0450

ANANTH PRASAD, P.E.  
SECRETARY

Venkat Vattikuti, P.E., PTOE  
Transportation Engineer/ Planner  
Community Development  
18500 Murdock Circle, Suite B-200  
Port Charlotte, FL 33948

**RE: Sandhill Development of Regional Impact (DRI), I 75 & Kings Highway,  
Transportation Study Methodology – FDOT Comments and Recommendations**

Dear Mr. Vattikuti:

The Florida Department of Transportation, District One, has reviewed the Sandhill Development of Regional Impact (DRI), I 75 & Kings Highway, Transportation Study Methodology (received by the Department via email on March 21, 2014). The Department offers the County the following comments and recommendations for your consideration regarding the proposed Transportation Methodology.

**FDOT Comment # 1:**

Page 1 of the methodology mentions that the applicant is seeking an increase in specific land uses for Tract 5 of the Sandhill DRI. Please provide the details on the approved land uses for the DRI and show how the proposed increase in specific land uses will not constitute a Substantial Deviation.

**FDOT Comment # 2 – Annual Report Data Collection:**

Based on Resolution 2009-237 pages 10-12, Transportation Condition 12(b)(1) please include under “**Significantly Impacted Regional Roadways**” - I-75 ramps – Kings Highway to Southbound lanes; Southbound lanes to Kings Highway; and Northbound lanes to Kings Highway.

**FDOT Comment # 3 – Mitigation of Project Traffic Analysis:**

Based on Resolution 2009-237 pages 10-12, Transportation Condition 12(b)(1) and 12(d), and 12(e), please include “I-75 ramps – Kings Highway to Southbound lanes; Southbound lanes to Kings Highway; and Northbound lanes to Kings Highway” under the locations to be evaluated.

Mr. Venkat Vattikuti  
Sandhill DRI Transportation Study Methodology – FDOT Comments and Recommendations  
April 1, 2014  
Page 2 of 2

If you have any questions please free to contact me at (863) 519-2395, or by email at [bob.crawley@dot.state.fl.us](mailto:bob.crawley@dot.state.fl.us).

Sincerely,

A handwritten signature in black ink, appearing to be 'BC' or 'Crawley' in a stylized cursive script.

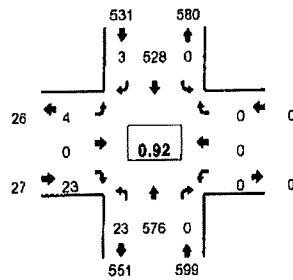
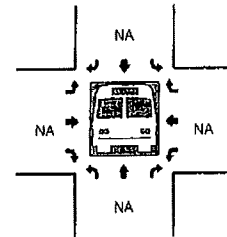
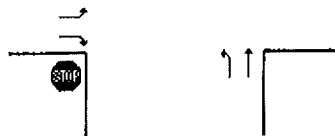
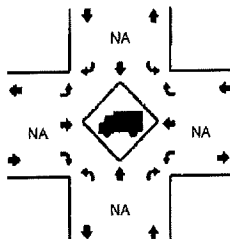
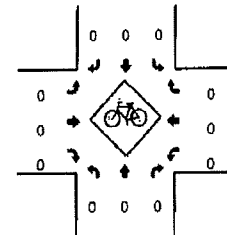
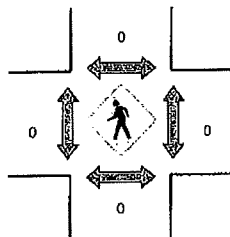
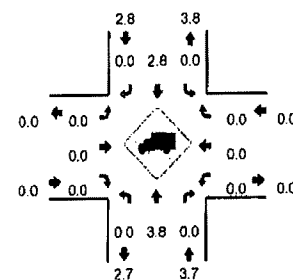
Bob Crawley  
District Transportation Modeling Coordinator  
FDOT District One

## **APPENDIX C:**

### **Project Driveway Volume Count Data**

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kings Hwy -- St James Place Dwy  
CITY/STATE: Port Charlotte, FLQC JOB #: 12478501  
DATE: Tue, Apr 15 2014Peak-Hour: 4:30 PM -- 5:30 PM  
Peak 15-Min: 5:15 PM -- 5:30 PM

15-Min Count Period Beginning At	Kings Hwy (Northbound)					Kings Hwy (Southbound)					St James Place Dwy (Eastbound)					St James Place Dwy (Westbound)					Total	Hourly Totals	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*			
4:00 PM	6	144	0	1	0	0	135	0	0	0	0	0	2	0	0	0	0	0	0	0	0	288	
4:15 PM	11	131	0	0	0	0	127	0	0	0	1	0	5	0	0	0	0	0	0	0	0	275	
4:30 PM	2	135	0	0	0	0	143	1	0	0	0	0	4	0	0	0	0	0	0	0	0	285	1116
4:45 PM	5	136	0	0	0	0	118	1	0	0	3	0	5	0	0	0	0	0	0	0	0	268	1119
5:00 PM	8	129	0	0	0	0	147	0	0	0	0	0	7	0	0	0	0	0	0	0	0	291	1119
5:15 PM	8	176	0	0	0	0	120	1	0	0	1	0	7	0	0	0	0	0	0	0	0	313	1157
5:30 PM	6	134	0	0	0	0	127	0	0	0	1	0	3	0	0	0	0	0	0	0	0	271	1143
5:45 PM	10	121	0	1	0	0	78	0	0	0	1	0	10	0	0	0	0	0	0	0	0	221	1096
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total		
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*			
All Vehicles	32	704	0	0	0	0	480	4	0	0	4	0	28	0	0	0	0	0	0	0	0	1252	
Heavy Trucks	0	16	0			0	16	0			0	0	0			0	0	0			32		
Pedestrians		0					0					0					0				0		
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0		
Railroad																							
Stopped Buses																							
Comments:																							

Comments:

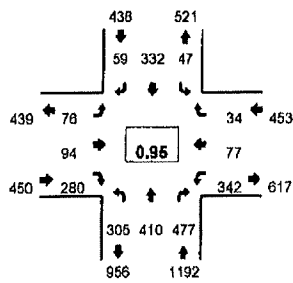
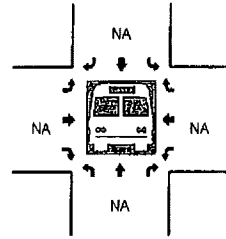
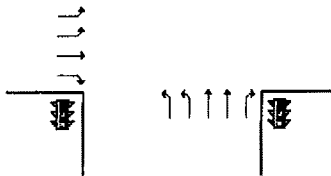
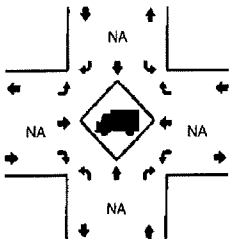
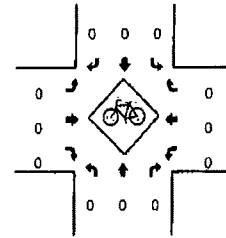
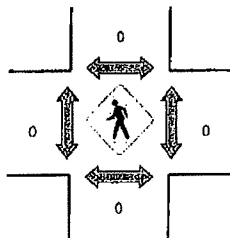
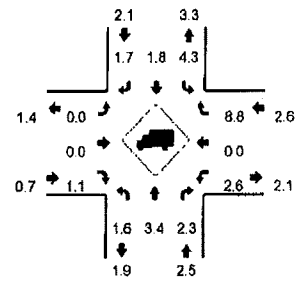
Report generated on 4/21/2014 10:56 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212



Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kings Hwy -- Sandhill Blvd  
CITY/STATE: Port Charlotte, FLQC JOB #: 12478502  
DATE: Tue, Apr 08 2014Peak-Hour: 4:45 PM -- 5:45 PM  
Peak 15-Min: 5:15 PM -- 5:30 PM

R\* = RTOR

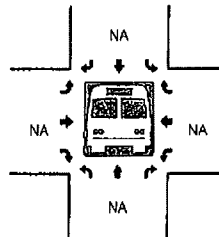
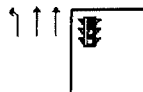
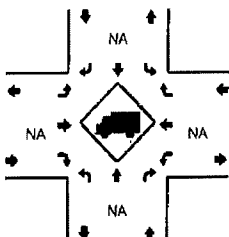
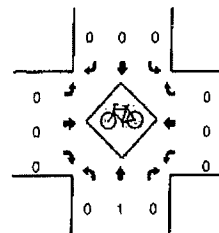
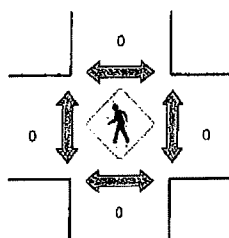
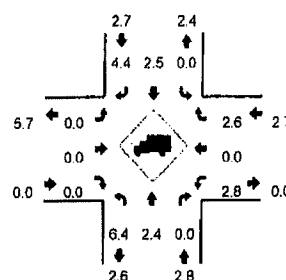
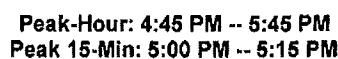
15-Min Count Period Beginning At	Kings Hwy (Northbound)					Kings Hwy (Southbound)					Sandhill Blvd (Eastbound)					Sandhill Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	55	111	98	0	21	20	78	2	0	10	22	29	41	0	32	72	19	10	0	4	624	
4:15 PM	79	119	88	0	22	17	66	2	0	4	15	22	44	0	39	48	15	5	0	3	588	
4:30 PM	74	108	74	0	18	13	108	9	1	10	13	15	26	0	40	56	14	3	0	7	589	
4:45 PM	75	93	103	1	22	3	70	6	0	8	22	28	28	0	34	79	17	9	0	3	597	2398
5:00 PM	80	101	96	1	19	8	107	6	1	11	12	21	42	0	32	89	19	6	0	3	854	2428
5:15 PM	76	114	102	0	15	20	77	8	0	10	21	25	46	0	36	92	18	4	0	2	668	2506
5:30 PM	72	102	107	0	13	15	78	6	0	6	21	22	38	0	24	82	23	6	0	1	616	2533
5:45 PM	72	81	94	1	15	7	78	7	0	11	16	32	35	0	26	67	23	1	0	0	566	2502
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	304	456	408	0	60	80	308	32	0	40	84	100	184	0	144	368	72	16	0	8	2664	
Heavy Trucks	8	12	12			4	8	0			0	0	0			4	0	0			48	
Pedestrians	0	0	0			0	0	0			0	0	0			0	0	0			0	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad																						
Stopped Buses																						

Comments:

**Method for determining peak hour: Total Entering Volume**

QC JOB #: 12478503

DATE: Tue, Apr 15 2014

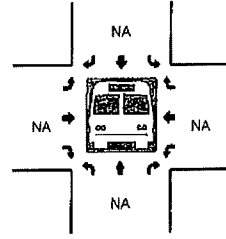
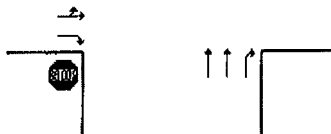
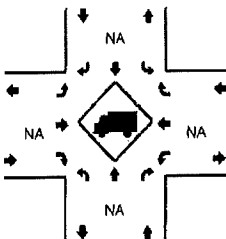
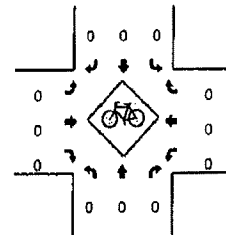
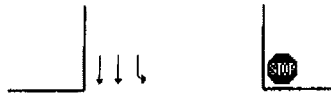
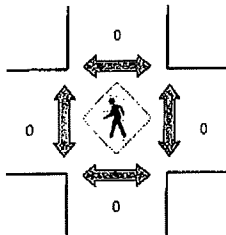
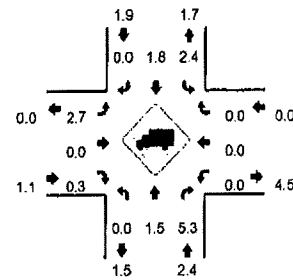
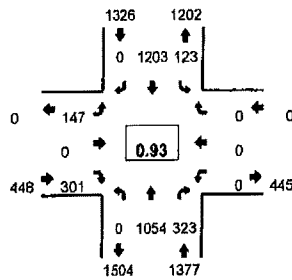

$$R' \neq RTOR$$

Report generated on 4/21/2014 10:56 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kings Hwy -- I-75 SB Ramps  
CITY/STATE: Port Charlotte, FLQC JOB #: 12478504  
DATE: Tue, Apr 08 2014Peak-Hour: 4:45 PM -- 5:45 PM  
Peak 15-Min: 5:15 PM -- 5:30 PM

15-Min Count Period	Kings Hwy (Northbound)					Kings Hwy (Southbound)					I-75 SB Ramps (Eastbound)					I-75 SB Ramps (Westbound)					Total	Hourly Totals		
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*				
4:00 PM	0	255	62	0	0	17	246	0	0	0	32	0	51	0	0	0	0	0	0	0	0	663		
4:15 PM	0	277	88	0	0	17	245	0	1	0	39	0	57	0	0	0	0	0	0	0	0	724		
4:30 PM	0	234	80	0	0	24	309	0	1	0	25	1	74	0	0	0	0	0	0	0	0	748		
4:45 PM	0	258	71	0	0	27	287	0	0	0	29	0	63	0	0	0	0	0	0	0	0	735		2870
5:00 PM	0	267	93	0	0	34	300	0	0	0	38	0	64	0	0	0	0	0	0	0	0	796		3003
5:15 PM	0	279	76	0	0	38	332	0	0	0	40	0	86	0	0	0	0	0	0	0	0	851		3130
5:30 PM	0	250	83	0	0	23	284	0	1	0	40	0	88	0	0	0	0	0	0	0	0	769		3151
5:45 PM	0	239	68	0	0	22	253	0	0	0	34	0	72	0	0	0	0	0	0	0	0	688		3104
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total			
All Vehicles	0	1116	304	0	0	152	1328	0	0	0	160	0	344	0	0	0	0	0	0	0	0	3404		
Heavy Trucks	0	12	12			0	24	0			8	0	0			0	0	0				56		
Pedestrians	0	0	0			0	0	0			0	0	0			0	0	0				0		
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0				0		
Railroad																								
Stopped Buses																								
Comments:																								

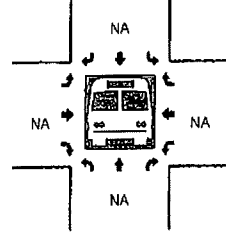
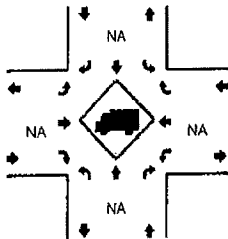
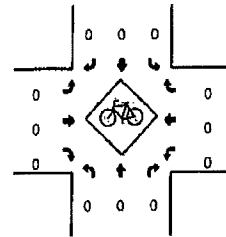
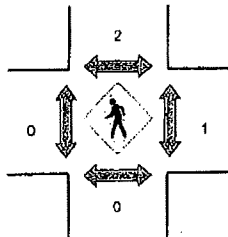
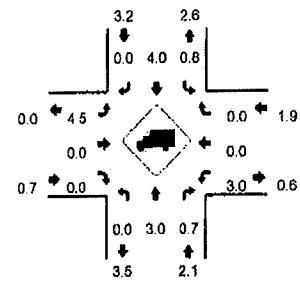
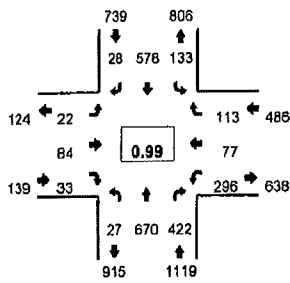
Comments:

Report generated on 4/21/2014 10:56 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Kings Hwy -- Rampart Blvd  
CITY/STATE: Port Charlotte, FLQC JOB #: 12478505  
DATE: Tue, Apr 15 2014Peak-Hour: 4:30 PM -- 5:30 PM  
Peak 15-Min: 5:00 PM -- 5:15 PM

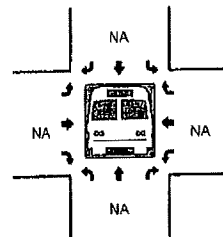
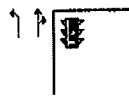
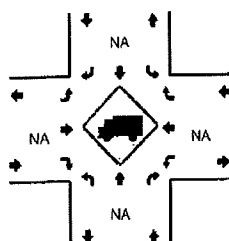
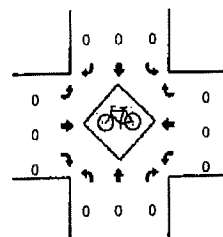
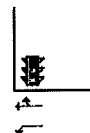
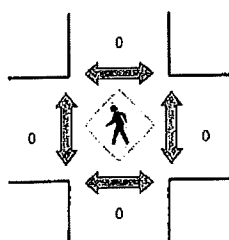
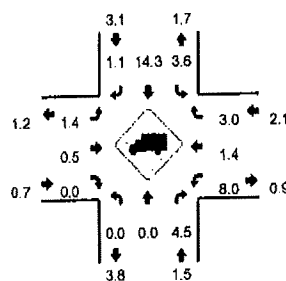
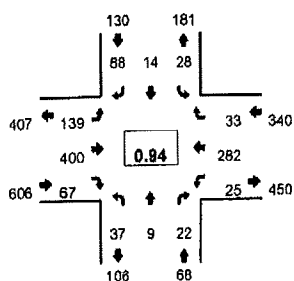
R\* = RTOR

15-Min Count Period Beginning At	Kings Hwy (Northbound)					Kings Hwy (Southbound)					Rampart Blvd (Eastbound)					Rampart Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	9	124	51	2	51	29	131	2	1	4	8	20	0	0	4	87	15	13	0	12	563	
4:15 PM	5	148	58	2	50	25	147	4	0	2	6	24	1	0	10	68	13	8	0	22	593	
4:30 PM	2	188	54	1	59	26	143	5	1	0	4	20	1	0	4	66	11	13	0	14	612	
4:45 PM	8	154	28	1	67	42	144	4	0	2	4	21	2	0	6	78	24	18	0	15	618	2388
5:00 PM	8	186	45	3	66	28	140	7	0	3	5	17	2	0	10	79	14	12	0	21	628	2451
5:15 PM	1	162	32	3	69	36	151	5	0	2	9	26	8	0	2	73	28	11	0	9	625	2483
5:30 PM	8	132	33	4	53	24	140	6	0	1	4	19	1	0	2	61	21	13	0	15	537	2408
5:45 PM	4	123	61	2	37	30	117	5	0	3	2	17	2	0	5	85	23	8	0	21	545	2335
Peak 15-Min Flowrates	Northbound					Southbound					Eastbound					Westbound					Total	
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
All Vehicles	32	664	180	12	272	112	580	28	0	12	20	68	8	0	40	316	56	48	0	84	2512	
Heavy Trucks	0	16	0			0	28	0			0	0	0			12	0	0			56	
Pedestrians		0					0					0					0				0	
Bicycles	0	0	0			0	0	0			0	0	0			0	0	0			0	
Railroad Stopped Buses																						

Comments:

Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

LOCATION: Capricorn Blvd -- Rampart Blvd  
CITY/STATE: Port Charlotte, FLQC JOB #: 12478506  
DATE: Tue, Apr 15 2014Peak-Hour: 4:30 PM -- 5:30 PM  
Peak 15-Min: 5:00 PM -- 5:15 PM

15-Min Count Period Beginning At	Capricorn Blvd (Northbound)					Capricorn Blvd (Southbound)					Rampart Blvd (Eastbound)					Rampart Blvd (Westbound)					Total	Hourly Totals
	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*	Left	Thru	Right	U	R*		
4:00 PM	5	2	0	0	2	10	1	9	0	18	26	99	5	0	6	1	73	1	0	2	260	
4:15 PM	7	1	0	0	1	10	2	7	0	11	31	103	12	0	0	2	71	5	0	0	263	
4:30 PM	7	3	4	0	1	6	6	12	0	9	29	95	14	0	4	4	78	9	0	1	282	
4:45 PM	9	5	3	0	2	6	3	13	0	13	34	89	12	0	2	3	75	9	0	0	278	1083
5:00 PM	10	1	3	0	4	9	5	10	0	13	46	109	12	0	2	8	65	5	0	2	303	1126
5:15 PM	11	0	3	0	2	7	0	3	0	15	30	108	18	0	3	10	64	7	0	0	281	1144
5:30 PM	10	3	1	0	3	2	2	2	0	15	37	83	9	0	0	3	72	7	0	0	249	1111
5:45 PM	13	3	2	0	0	7	1	6	0	24	29	90	15	0	0	3	59	8	0	2	262	1095
Peak 15-Min Flowrates	40	4	12	0	18	36	20	40	0	52	184	432	48	0	8	32	260	20	0	8	1212	
All Vehicles	0	0	0			0	8	0			0	0	0			8	4	0			20	
Heavy Trucks																					0	
Pedestrians																					0	
Bicycles																					0	
Railroad																					0	
Stopped Buses																					0	

Comments:

Report generated on 4/21/2014 10:56 AM

SOURCE: Quality Counts, LLC (<http://www.qualitycounts.net>) 1-877-580-2212

**APPENDIX D:**  
**Buildout Project Trip Generation**  
**Worksheets**

**TABLE 2**  
**SANDHILL DRI APPROVED PLUS PROPOSED LAND USES**  
**TRIP GENERATION - P.M. PEAK HOUR**

TABLE 2 SANDHILL DRI APPROVED PLUS PROPOSED LAND USES TRIP GENERATION - P.M. PEAK HOUR																			
Land Use #	Land Use Type	Size	Units	Formula	Total Trips	Enter	Exit	Internal Capture			Total External Trips	Pass-by			Net New External Trips				
								% Internal	Total Internal Trips	Internal Enter		Internal Exit	% Total	Pass-by Trips	Enter	Exit	Total	Enter	Exit
Tract 5 Only																			
220	Apartment	890	DU	$T = 0.49(X) \times 3.73$	507	330	177		65	42		442	0%	0	0		442	288	154
820	Shopping Center	131	KSF	$\ln(T) = 0.67\ln(X) + 3.31$	718	345	373		89	43		629	34.0%	103	111		415	199	216
254	Assisted Living	458	Beds	$T = 0.22(X)$	101	44	57		13	6		88	0%	0	0		88	38	50
110	General Light Industrial	430	KSF	$T = 1.43(X) - 167.36$	458	55	403		0.0%	0		458	0%	0	0		458	55	403
710	Office Building	30	KSF	$T = 1.12(X) - 78.45$	112	19	93		15	3		127	0%	0	0		97	16	81
					1,996	793	1,103	9.00%	182	94		1,714		214	103	111	1,500	596	904

## **APPENDIX D:**

# **Synchro 8 Analysis Reports**



# HCM 2010 TWSC

## 1: Kings Hwy & St. James Place Dwy

6/11/2014

### Intersection

Int Delay, s/veh 0.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	4	21	21	536	491	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	4	3	0
Mvmt Flow	4	23	23	583	534	3

























Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	1162	534	534
Stage 1	534	-	-
Stage 2	628	-	-
Critical Hdwy	6.4	6.2	4.1
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.4	-	-
Follow-up Hdwy	3.5	3.3	2.2
Pot Cap-1 Maneuver	218	550	1044
Stage 1	592	-	-
Stage 2	536	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	213	550	1044
Mov Cap-2 Maneuver	213	-	-
Stage 1	592	-	-
Stage 2	524	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0.3	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1044	-	213	550	-	-
HCM Lane V/C Ratio	0.022	-	0.02	0.042	-	-
HCM Control Delay (s)	8.5	-	22.3	11.8	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0.1	0.1	-	-

HCM 2010 Signalized Intersection Summary  
2: Kings Hwy & Sandhill Blvd

6/11/2014

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	70	86	258	315	71	31	281	377	439	43	305	54
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	190.0	188.1	184.5	184.9	190.0	186.3	184.5	186.3	182.7	186.3	186.3
Adj Flow Rate, veh/h	74	91	272	332	75	33	296	397	462	45	321	57
Adj No. of Lanes	2	1	1	2	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	3	0	0	2	3	2	4	2	2
Cap, veh/h	118	829	866	401	634	279	362	1052	662	58	809	415
Arrive On Green	0.03	0.44	0.44	0.12	0.52	0.52	0.11	0.30	0.30	0.03	0.23	0.23
Sat Flow, veh/h	3510	1900	1599	3408	1218	536	3442	3505	1583	1740	3539	1583
Grp Volume(v), veh/h	74	91	272	332	0	108	296	397	462	45	321	57
Grp Sat Flow(s),veh/h/ln	1755	1900	1599	1704	0	1755	1721	1752	1583	1740	1770	1583
Q Serve(g_s), s	3.0	4.0	13.4	13.5	0.0	4.5	12.0	12.7	34.1	3.7	10.9	3.9
Cycle Q Clear(g_c), s	3.0	4.0	13.4	13.5	0.0	4.5	12.0	12.7	34.1	3.7	10.9	3.9
Prop In Lane	1.00		1.00	1.00		0.31	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	118	829	866	401	0	913	362	1052	662	58	809	415
V/C Ratio(X)	0.63	0.11	0.31	0.83	0.00	0.12	0.82	0.38	0.70	0.78	0.40	0.14
Avail Cap(c_a), veh/h	321	829	866	1342	0	913	944	1479	854	208	946	476
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	67.8	23.7	18.0	61.4	0.0	17.4	62.3	39.3	34.0	68.2	46.5	40.2
Incr Delay (d2), s/veh	5.4	0.3	0.9	4.4	0.0	0.3	4.6	0.2	1.7	19.6	0.3	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	2.2	6.1	6.7	0.0	2.2	5.9	6.2	15.2	2.1	5.4	1.7
LnGrp Delay(d),s/veh	73.2	24.0	19.0	65.8	0.0	17.7	66.9	39.5	35.8	87.8	46.9	40.3
LnGrp LOS	E	C	B	E		B	E	D	D	F	D	D
Approach Vol, veh/h		437			440			1155			423	
Approach Delay, s/veh		29.2			54.0			45.0			50.3	
Approach LOS		C			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.8	78.0	8.7	46.7	20.7	66.1	18.9	36.5				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	13.0	74.0	17.0	60.0	56.0	31.0	39.0	38.0				
Max Q Clear Time (g_c+I1), s	5.0	6.5	5.7	36.1	15.5	15.4	14.0	12.9				
Green Ext Time (p_c), s	0.1	2.2	0.0	6.6	1.2	1.8	1.0	6.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			44.7									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary  
 3: Kings Hwy & I-75 NB Off Ramp/I-75 NB On Ramp

6/11/2014

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↖↗		↖↗	↖	↗↗			↗↗	↗
Volume (veh/h)	0	0	0	429	0	181	130	1082	0	0	887	126
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				184.5	0.0	184.5	179.2	186.3	0.0	0.0	186.3	182.7
Adj Flow Rate, veh/h				466	0	197	141	1176	0	0	964	0
Adj No. of Lanes				2	0	2	1	2	0	0	2	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				3	0	3	6	2	0	0	2	4
Cap, veh/h				665	0	538	435	2435	0	0	2017	885
Arrive On Green				0.20	0.00	0.20	0.06	0.69	0.00	0.00	0.57	0.00
Sat Flow, veh/h				3408	0	2760	1707	3632	0	0	3632	1553
Grp Volume(v), veh/h				466	0	197	141	1176	0	0	964	0
Grp Sat Flow(s), veh/h/ln				1704	0	1380	1707	1770	0	0	1770	1553
Q Serve(g_s), s				8.7	0.0	4.2	2.1	10.6	0.0	0.0	11.0	0.0
Cycle Q Clear(g_c), s				8.7	0.0	4.2	2.1	10.6	0.0	0.0	11.0	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				665	0	538	435	2435	0	0	2017	885
V/C Ratio(X)				0.70	0.00	0.37	0.32	0.48	0.00	0.00	0.48	0.00
Avail Cap(c_a), veh/h				2192	0	1775	808	5069	0	0	3879	1702
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				25.7	0.0	23.9	6.0	5.0	0.0	0.0	8.7	0.0
Incr Delay (d2), s/veh				1.4	0.0	0.4	0.4	0.1	0.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				4.2	0.0	1.6	1.0	5.1	0.0	0.0	5.4	0.0
LnGrp Delay(d),s/veh				27.0	0.0	24.3	6.4	5.1	0.0	0.0	8.9	0.0
LnGrp LOS				C		C	A	A			A	
Approach Vol, veh/h					663			1317			964	
Approach Delay, s/veh					26.2			5.3			8.9	
Approach LOS					C			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		17.4		51.1			8.1	43.0				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		44.0		98.0			19.0	75.0				
Max Q Clear Time (g_c+I1), s		10.7		12.6			4.1	13.0				
Green Ext Time (p_c), s		2.6		28.4			0.3	26.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				11.2								
HCM 2010 LOS				B								

**Intersection**

Int Delay, s/veh 0.5

Movement	SBL	SBR	NWL	NWR	NEL	NET	NER
Vol, veh/h	135	277	0	0	0	970	297
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	Yield	-	-	-	-	Yield
Storage Length	250	-	-	-	-	-	0
Veh in Median Storage, #	1	-	0	-	-	0	-
Grade, %	0	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93
Heavy Vehicles, %	3	0	0	0	0	2	5
Mvmt Flow	145	298	0	0	0	1043	319

Major/Minor	Minor2	Major1
Conflicting Flow All	1955	595
Stage 1	1433	-
Stage 2	522	-
Critical Hdwy	6.8	6.9
Critical Hdwy Stg 1	5.8	-
Critical Hdwy Stg 2	5.8	-
Follow-up Hdwy	3.5	3.3
Pot Cap-1 Maneuver	57	452
Stage 1	189	-
Stage 2	566	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	47	452
Mov Cap-2 Maneuver	120	-
Stage 1	154	-
Stage 2	566	-

Approach	SB	NE
HCM Control Delay, s	-	0
HCM LOS	-	-

Minor Lane/Major Mvmt	NEL	NET	NER	SBLn1	SBLn2	SWL	SWT	SWR
Capacity (veh/h)	594	-	-	-	452	663	-	-
HCM Lane V/C Ratio	-	-	-	-	0.659	0.183	-	-
HCM Control Delay (s)	0	-	-	-	27.1	11.6	-	-
HCM Lane LOS	A	-	-	-	D	B	-	-
HCM 95th %tile Q(veh)	0	-	-	-	4.7	0.7	-	-

**Intersection**

Int Delay, s/veh

<b>Movement</b>	<b>SWL</b>	<b>SWT</b>	<b>SWR</b>
Vol, veh/h	113	1107	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	200	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	93	93	93
Heavy Vehicles, %	2	2	2
Mvmt Flow	122	1190	0

<b>Major/Minor</b>	<b>Major2</b>		
Conflicting Flow All	1043	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	663	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	663	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

























<b>Approach</b>	<b>SW</b>
HCM Control Delay, s	1.1
HCM LOS	

<b>Minor Lane/Major Mvmt</b>
------------------------------

# HCM Signalized Intersection Capacity Analysis

## 5: Kings Hwy & Rampart Blvd

6/11/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	78	31	275	72	105	25	623	392	124	538	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	1900	1615	1665	1723	1615	1805	3505	1599	1787	3471	1615
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	1900	1615	1665	1723	1615	1805	3505	1599	1787	3471	1615
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	20	79	31	278	73	106	25	629	396	125	543	26
RTOR Reduction (vph)	0	0	29	0	0	89	0	0	211	0	0	11
Lane Group Flow (vph)	20	79	2	175	176	17	25	629	185	125	543	15
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%	0%	3%	1%	1%	4%	0%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.8	7.8	7.8	15.8	15.8	15.8	2.4	45.2	45.2	12.1	54.9	54.9
Effective Green, g (s)	7.8	7.8	7.8	15.8	15.8	15.8	2.4	45.2	45.2	12.1	54.9	54.9
Actuated g/C Ratio	0.08	0.08	0.08	0.16	0.16	0.16	0.02	0.47	0.47	0.12	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	139	152	130	271	280	263	44	1634	745	223	1966	915
v/s Ratio Prot	0.01	c0.04		c0.11	0.10		0.01	c0.18		c0.07	0.16	
v/s Ratio Perm			0.00			0.01			0.12			0.01
v/c Ratio	0.14	0.52	0.02	0.65	0.63	0.07	0.57	0.38	0.25	0.56	0.28	0.02
Uniform Delay, d1	41.4	42.8	41.0	37.9	37.8	34.3	46.7	16.8	15.6	39.9	10.8	9.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	3.0	0.1	5.2	4.4	0.1	15.7	0.7	0.8	3.2	0.3	0.0
Delay (s)	41.9	45.7	41.1	43.1	42.2	34.4	62.5	17.5	16.4	43.1	11.1	9.2
Level of Service	D	D	D	D	D	C	E	B	B	D	B	A
Approach Delay (s)		44.0			40.7			18.2			16.8	
Approach LOS		D			D			B			B	






















### Intersection Summary

HCM 2000 Control Delay	23.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	50.3%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 2010 Signalized Intersection Summary  
6: Luther Rd/Capricorn Blvd & Rampart Blvd

6/11/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	129	372	62	23	262	31	34	8	20	26	13	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	188.1	190.0	190.0	175.9	187.7	190.0	190.0	184.8	190.0	190.0	184.7	190.0
Adj Flow Rate, veh/h	137	396	66	24	279	33	36	9	21	28	14	87
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	8	1	1	0	0	0	14	14	14
Cap, veh/h	513	583	97	38	764	90	576	192	447	170	111	414
Arrive On Green	0.37	0.37	0.37	0.02	0.46	0.46	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1074	1589	265	1675	1648	195	1314	494	1152	229	285	1064
Grp Volume(v), veh/h	137	0	462	24	0	312	36	0	30	129	0	0
Grp Sat Flow(s),veh/h/ln	1074	0	1853	1675	0	1843	1314	0	1645	1578	0	0
Q Serve(g_s), s	5.1	0.0	11.4	0.8	0.0	5.9	1.0	0.0	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	5.8	0.0	11.4	0.8	0.0	5.9	3.8	0.0	0.6	2.8	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.11	1.00		0.70	0.22		0.67
Lane Grp Cap(c), veh/h	513	0	680	38	0	854	576	0	639	694	0	0
V/C Ratio(X)	0.27	0.00	0.68	0.64	0.00	0.37	0.06	0.00	0.05	0.19	0.00	0.00
Avail Cap(c_a), veh/h	1093	0	1680	248	0	2080	576	0	639	694	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	12.9	0.0	14.4	26.2	0.0	9.4	12.2	0.0	10.3	11.0	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.2	16.7	0.0	0.3	0.2	0.0	0.1	0.6	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	0.0	6.0	0.5	0.0	3.0	0.4	0.0	0.3	1.4	0.0	0.0
LnGrp Delay(d),s/veh	13.2	0.0	15.6	42.9	0.0	9.6	12.4	0.0	10.4	11.5	0.0	0.0
LnGrp LOS	B		B	D		A	B		B	B		
Approach Vol, veh/h		599			336			66			129	
Approach Delay, s/veh		15.1			12.0			11.5			11.5	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	5.2	23.8		25.0		29.0				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0				
Max Green Setting (Gmax), s		21.0	8.0	49.0		21.0		61.0				
Max Q Clear Time (g_c+1), s		5.8	2.8	13.4		4.8		7.9				
Green Ext Time (p_c), s		0.8	0.0	6.5		0.9		6.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			13.5									
HCM 2010 LOS			B									

# Arterial Level of Service

6/11/2014

## Arterial Level of Service: NE Kings Hwy

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-75 NB Off Ramp	II	41	28.6	7.9	36.5	0.28	27.7	C
Sandhill Blvd	II	45	24.4	50.9	75.3	0.22	10.7	F
Total	II		53.0	58.8	111.8	0.50	16.3	E

## Arterial Level of Service: SW Kings Hwy

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Sandhill Blvd	III	32	66.5	64.0	130.5	0.60	16.5	D
I-75 NB On Ramp	III	45	24.4	19.2	43.6	0.22	18.5	C
Total	III		90.9	83.2	174.1	0.82	17.0	D



HCM 2010 TWSC  
1: Kings Hwy & St. James Place Dwy

6/11/2014

Intersection

Int Delay, s/veh 6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	344	0	675	567	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	4	3	0
Mvmt Flow	0	374	0	734	616	24

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1350	616	616	0	-	0
Stage 1	616	-	-	-	-	-
Stage 2	734	-	-	-	-	-
Critical Hdwy	6.4	6.2	4.1	-	-	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	2.2	-	-	-
Pot Cap-1 Maneuver	168	494	974	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	478	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-
Mov Cap-1 Maneuver	168	494	974	-	-	-
Mov Cap-2 Maneuver	168	-	-	-	-	-
Stage 1	543	-	-	-	-	-
Stage 2	478	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.6	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	974	-	494	-	-
HCM Lane V/C Ratio	-	-	0.757	-	-
HCM Control Delay (s)	0	-	31.6	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	6.5	-	-

HCM 2010 Signalized Intersection Summary  
2: Kings Hwy & Sandhill Blvd

6/11/2014



















Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations	↖↗	↑	↖	↖↗	↗		↖↗	↖↗	↖	↖	↖↗	↖
Volume (veh/h)	70	86	258	315	71	85	281	860	439	124	1037	54
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	190.0	188.1	184.5	181.2	190.0	186.3	184.5	186.3	182.7	186.3	186.3
Adj Flow Rate, veh/h	74	91	272	332	75	89	296	905	462	131	1092	57
Adj No. of Lanes	2	1	1	2	1	0	2	2	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	3	0	0	2	3	2	4	2	2
Cap, veh/h	115	738	786	394	356	423	355	1075	669	152	1030	512
Arrive On Green	0.03	0.39	0.39	0.12	0.47	0.47	0.10	0.31	0.31	0.09	0.29	0.29
Sat Flow, veh/h	3510	1900	1599	3408	756	897	3442	3505	1583	1740	3539	1583
Grp Volume(v), veh/h	74	91	272	332	0	164	296	905	462	131	1092	57
Grp Sat Flow(s),veh/h/ln	1755	1900	1599	1704	0	1653	1721	1752	1583	1740	1770	1583
Q Serve(g_s), s	3.3	4.8	16.4	15.0	0.0	9.1	13.3	37.9	37.4	11.7	45.7	4.0
Cycle Q Clear(g_c), s	3.3	4.8	16.4	15.0	0.0	9.1	13.3	37.9	37.4	11.7	45.7	4.0
Prop In Lane	1.00		1.00	1.00		0.54	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	115	738	786	394	0	779	355	1075	669	152	1030	512
V/C Ratio(X)	0.64	0.12	0.35	0.84	0.00	0.21	0.83	0.84	0.69	0.86	1.06	0.11
Avail Cap(c_a), veh/h	291	738	786	1215	0	779	855	1339	788	188	1030	512
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	75.0	30.9	24.5	68.0	0.0	24.4	69.1	50.9	37.0	70.7	55.7	37.3
Incr Delay (d2), s/veh	5.9	0.3	1.2	4.9	0.0	0.6	5.1	4.1	2.1	27.0	45.6	0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.7	2.6	7.5	7.3	0.0	4.3	6.6	19.0	16.6	6.7	28.8	1.7
LnGrp Delay(d),s/veh	80.9	31.2	25.7	73.0	0.0	25.0	74.2	55.0	39.1	97.8	101.3	37.4
LnGrp LOS	F	C	C	E		C	E	D	D	F	F	D
Approach Vol, veh/h		437			496			1663			1280	
Approach Delay, s/veh		36.2			57.1			54.0			98.1	
Approach LOS		D			E			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	9.1	78.0	17.7	52.2	22.2	65.0	20.2	49.7				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	13.0	74.0	17.0	60.0	56.0	31.0	39.0	38.0				
Max Q Clear Time (g_c+I1), s	5.3	11.1	13.7	39.9	17.0	18.4	15.3	47.7				
Green Ext Time (p_c), s	0.1	2.6	0.1	8.3	1.2	2.0	1.0	0.0				

Intersection Summary

HCM 2010 Ctrl Delay 66.9  
HCM 2010 LOS E

HCM 2010 Signalized Intersection Summary  
 3: Kings Hwy & I-75 NB Off Ramp/I-75 NB On Ramp

6/11/2014

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	0	0	0	429	0	318	130	1428	0	0	1484	262
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				184.5	0.0	184.5	179.2	186.3	0.0	0.0	186.3	182.7
Adj Flow Rate, veh/h				466	0	346	141	1552	0	0	1613	0
Adj No. of Lanes				2	0	2	1	2	0	0	2	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				3	0	3	6	2	0	0	2	4
Cap, veh/h				615	0	498	259	2631	0	0	2334	1024
Arrive On Green				0.18	0.00	0.18	0.05	0.74	0.00	0.00	0.66	0.00
Sat Flow, veh/h				3408	0	2760	1707	3632	0	0	3632	1553
Grp Volume(v), veh/h				466	0	346	141	1552	0	0	1613	0
Grp Sat Flow(s),veh/h/ln				1704	0	1380	1707	1770	0	0	1770	1553
Q Serve(g_s), s				13.6	0.0	12.3	2.6	21.0	0.0	0.0	29.9	0.0
Cycle Q Clear(g_c), s				13.6	0.0	12.3	2.6	21.0	0.0	0.0	29.9	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				615	0	498	259	2631	0	0	2334	1024
V/C Ratio(X)				0.76	0.00	0.70	0.54	0.59	0.00	0.00	0.69	0.00
Avail Cap(c_a), veh/h				1429	0	1157	490	3305	0	0	2529	1110
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				40.8	0.0	40.3	13.5	6.2	0.0	0.0	11.2	0.0
Incr Delay (d2), s/veh				1.9	0.0	1.8	1.8	0.2	0.0	0.0	0.7	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.6	0.0	4.8	2.4	10.2	0.0	0.0	14.6	0.0
LnGrp Delay(d),s/veh				42.8	0.0	42.1	15.3	6.4	0.0	0.0	11.9	0.0
LnGrp LOS				D		D	B	A			B	
Approach Vol, veh/h					812			1693			1613	
Approach Delay, s/veh					42.5			7.1			11.9	
Approach LOS					D			A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		22.9		82.0			8.8	73.2				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		44.0		98.0			19.0	75.0				
Max Q Clear Time (g_c+I1), s		15.6		23.0			4.6	31.9				
Green Ext Time (p_c), s		3.3		55.0			0.3	35.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				16.0								
HCM 2010 LOS				B								

**Intersection**

Int Delay, s/veh 1.8

Movement	SBL	SBR	NWL	NWR	NEL	NET	NER
Vol, veh/h	224	277	0	0	0	1226	297
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free	Free
RT Channelized	-	Yield	-	-	-	-	Yield
Storage Length	250	-	-	-	-	-	0
Veh in Median Storage, #	1	-	0	-	-	0	-
Grade, %	0	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93
Heavy Vehicles, %	3	0	0	0	0	2	5
Mvmt Flow	241	298	0	0	0	1318	319

Major/Minor	Minor2	Major1
Conflicting Flow All	2939	814
Stage 1	2280	-
Stage 2	659	-
Critical Hdwy	6.8	6.9
Critical Hdwy Stg 1	5.8	-
Critical Hdwy Stg 2	5.8	-
Follow-up Hdwy	3.5	3.3
Pot Cap-1 Maneuver	12	325
Stage 1	65	-
Stage 2	482	-
Platoon blocked, %	-	-
Mov Cap-1 Maneuver	4	325
Mov Cap-2 Maneuver	20	-
Stage 1	24	-
Stage 2	482	-

Approach	SB	NE
HCM Control Delay, s	-	0
HCM LOS	-	-

Minor Lane/Major Mvmt	NEL	NET	NER	SBLn1	SBLn2	SWL	SWT	SWR
Capacity (veh/h)	405	-	-	-	325	520	-	-
HCM Lane V/C Ratio	-	-	-	-	0.916	0.627	-	-
HCM Control Delay (s)	0	-	-	-	67.4	22.8	-	-
HCM Lane LOS	A	-	-	-	F	C	-	-
HCM 95th %tile Q(veh)	0	-	-	-	9	4.3	-	-

**Intersection**

Int Delay, s/veh

<b>Movement</b>	<b>SWL</b>	<b>SWT</b>	<b>SWR</b>
Vol, veh/h	303	1514	0
Conflicting Peds, #/hr	0	0	0
Sign Control	Free	Free	Free
RT Channelized	-	-	None
Storage Length	200	-	-
Veh in Median Storage, #	-	0	-
Grade, %	-	0	-
Peak Hour Factor	93	93	93
Heavy Vehicles, %	2	2	2
Mvmt Flow	326	1628	0

























<b>Major/Minor</b>	<b>Major2</b>		
Conflicting Flow All	1318	0	0
Stage 1	-	-	-
Stage 2	-	-	-
Critical Hdwy	4.14	-	-
Critical Hdwy Stg 1	-	-	-
Critical Hdwy Stg 2	-	-	-
Follow-up Hdwy	2.22	-	-
Pot Cap-1 Maneuver	520	-	-
Stage 1	-	-	-
Stage 2	-	-	-
Platoon blocked, %		-	-
Mov Cap-1 Maneuver	520	-	-
Mov Cap-2 Maneuver	-	-	-
Stage 1	-	-	-
Stage 2	-	-	-

<b>Approach</b>	<b>SW</b>
HCM Control Delay, s	3.8
HCM LOS	

**Minor Lane/Major Mvmt**

# HCM Signalized Intersection Capacity Analysis 5: Kings Hwy & Rampart Blvd

6/11/2014





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	78	31	275	72	105	25	736	392	124	710	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Fr't	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	1900	1615	1665	1723	1615	1805	3505	1599	1787	3471	1615
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	1900	1615	1665	1723	1615	1805	3505	1599	1787	3471	1615
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	32	79	31	278	73	106	25	743	396	125	717	26
RTOR Reduction (vph)	0	0	29	0	0	89	0	0	211	0	0	11
Lane Group Flow (vph)	32	79	2	175	176	17	25	743	185	125	717	15
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%	0%	3%	1%	1%	4%	0%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.8	7.8	7.8	15.8	15.8	15.8	2.4	45.2	45.2	12.1	54.9	54.9
Effective Green, g (s)	7.8	7.8	7.8	15.8	15.8	15.8	2.4	45.2	45.2	12.1	54.9	54.9
Actuated g/C Ratio	0.08	0.08	0.08	0.16	0.16	0.16	0.02	0.47	0.47	0.12	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	139	152	130	271	280	263	44	1634	745	223	1966	915
v/s Ratio Prot	0.02	c0.04		c0.11	0.10		0.01	c0.21		c0.07	0.21	
v/s Ratio Perm			0.00			0.01			0.12			0.01
v/c Ratio	0.23	0.52	0.02	0.65	0.63	0.07	0.57	0.45	0.25	0.56	0.36	0.02
Uniform Delay, d1	41.7	42.8	41.0	37.9	37.8	34.3	46.7	17.5	15.6	39.9	11.5	9.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	3.0	0.1	5.2	4.4	0.1	15.7	0.9	0.8	3.2	0.5	0.0
Delay (s)	42.6	45.7	41.1	43.1	42.2	34.4	62.5	18.4	16.4	43.1	12.0	9.2
Level of Service	D	D	D	D	D	C	E	B	B	D	B	A
Approach Delay (s)		44.0			40.7			18.7			16.4	
Approach LOS		D			D			B			B	

## Intersection Summary

HCM 2000 Control Delay	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	96.9	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary  
6: Luther Rd/Capricorn Blvd & Rampart Blvd

6/11/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	129	372	62	23	262	49	34	8	20	53	13	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	188.1	190.0	190.0	175.9	187.5	190.0	190.0	184.8	190.0	190.0	184.7	190.0
Adj Flow Rate, veh/h	137	396	66	24	279	52	36	9	21	56	14	87
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	8	1	1	0	0	0	14	14	14
Cap, veh/h	499	587	98	37	716	133	558	191	446	263	93	330
Arrive On Green	0.37	0.37	0.37	0.02	0.47	0.47	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1055	1589	265	1675	1538	287	1314	494	1152	446	239	852
Grp Volume(v), veh/h	137	0	462	24	0	331	36	0	30	157	0	0
Grp Sat Flow(s),veh/h/ln	1055	0	1853	1675	0	1825	1314	0	1645	1538	0	0
Q Serve(g_s), s	5.3	0.0	11.4	0.8	0.0	6.4	1.0	0.0	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	11.4	0.8	0.0	6.4	4.5	0.0	0.6	3.4	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.16	1.00		0.70	0.36		0.55
Lane Grp Cap(c), veh/h	499	0	685	37	0	850	558	0	637	685	0	0
V/C Ratio(X)	0.27	0.00	0.67	0.64	0.00	0.39	0.06	0.00	0.05	0.23	0.00	0.00
Avail Cap(c_a), veh/h	1062	0	1673	247	0	2051	558	0	637	685	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.3	0.0	14.4	26.3	0.0	9.5	12.8	0.0	10.4	11.2	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.2	16.7	0.0	0.3	0.2	0.0	0.1	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	6.0	0.5	0.0	3.3	0.4	0.0	0.3	1.7	0.0	0.0
LnGrp Delay(d),s/veh	13.6	0.0	15.5	43.0	0.0	9.8	13.0	0.0	10.5	12.0	0.0	0.0
LnGrp LOS	B		B	D		A	B		B	B		
Approach Vol, veh/h	599				355				66		157	
Approach Delay, s/veh	15.1				12.0				11.9		12.0	
Approach LOS	B				B				B		B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2		3	4	6		8					
Phs Duration (G+Y+Rc), s	25.0		5.2	24.1	25.0		29.3					
Change Period (Y+Rc), s	4.0		4.0	4.0	4.0		4.0					
Max Green Setting (Gmax), s	21.0		8.0	49.0	21.0		61.0					
Max Q Clear Time (g_c+I1), s	6.5		2.8	13.4	5.4		8.4					
Green Ext Time (p_c), s	1.0		0.0	6.7	1.0		6.9					
Intersection Summary												
HCM 2010 Ctrl Delay	13.6											
HCM 2010 LOS	B											

HCM 2010 TWSC  
7: Kings Hwy & Site Dwy

6/11/2014

Intersection

Int Delay, s/veh 159.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	52	567	551	575	728	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	500	0	100	-	-	100
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	57	616	599	625	791	37

Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	2614	791	0
Stage 1	791	-	-
Stage 2	1823	-	-
Critical Hdwy	6.42	4.12	-
Critical Hdwy Stg 1	5.42	-	-
Critical Hdwy Stg 2	5.42	-	-
Follow-up Hdwy	3.518	2.218	-
Pot Cap-1 Maneuver	~ 27	829	-
Stage 1	447	-	-
Stage 2	141	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	~ 7	829	-
Mov Cap-2 Maneuver	~ 7	-	-
Stage 1	447	-	-
Stage 2	~ 39	-	-

Approach	EB	NB	SB
HCM Control Delay, s	\$ 626.9	9.7	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	829	-	7	390	-	-
HCM Lane V/C Ratio	0.722	-	8.075	1.58	-	-
HCM Control Delay (s)	19.8	-	\$ 4209.2	298.4	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	6.4	-	8.6	34.9	-	-

Notes

~: Volume exceeds capacity    \$: Delay exceeds 300s    +: Computation Not Defined    \*: All major volume in platoon



HCM 2010 TWSC  
8: Kings Highway & Kingsway Circle

6/11/2014

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	33	56	113	562	535	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	61	123	611	582	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1439	582	582	0	-	0
Stage 1	582	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	146	513	992	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	128	513	992	-	-	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.4	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	992	-	128	513	-	-
HCM Lane V/C Ratio	0.124	-	0.28	0.119	-	-
HCM Control Delay (s)	9.1	-	43.7	13	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	0.4	-	-

# Arterial Level of Service

6/11/2014

## Arterial Level of Service: NE Kings Hwy

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-75 NB Off Ramp	II	41	28.6	9.3	37.9	0.28	26.7	C
Sandhill Blvd	II	45	24.4	63.7	88.1	0.22	9.2	F
Total	II		53.0	73.0	126.0	0.50	14.4	E

## Arterial Level of Service: SW Kings Hwy

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Sandhill Blvd	II	34	71.9	121.3	193.2	0.68	12.7	F
I-75 NB On Ramp	II	45	24.4	25.8	50.2	0.22	16.1	E
Total	II		96.3	147.1	243.4	0.91	13.4	E

# HCM 2010 TWSC

1: Kings Hwy & St. James Place Dwy

6/11/2014

## Intersection

Int Delay, s/veh 6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	0	344	0	675	567	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	0	4	3	0
Mvmt Flow	0	374	0	734	616	24

























Major/Minor	Minor2	Major1	Major2
Conflicting Flow All	983	616	616 0
Stage 1	616	-	-
Stage 2	367	-	-
Critical Hdwy	6.6	6.2	4.1 -
Critical Hdwy Stg 1	5.4	-	-
Critical Hdwy Stg 2	5.8	-	-
Follow-up Hdwy	3.5	3.3	2.2 -
Pot Cap-1 Maneuver	263	494	974 -
Stage 1	543	-	-
Stage 2	677	-	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	263	494	974 -
Mov Cap-2 Maneuver	263	-	-
Stage 1	543	-	-
Stage 2	677	-	-

Approach	EB	NB	SB
HCM Control Delay, s	31.6	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	974	-	494	-	-
HCM Lane V/C Ratio	-	-	0.757	-	-
HCM Control Delay (s)	0	-	31.6	-	-
HCM Lane LOS	A	-	D	-	-
HCM 95th %tile Q(veh)	0	-	6.5	-	-

HCM 2010 Signalized Intersection Summary  
2: Kings Hwy & Sandhill Blvd

6/11/2014

												
Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations												
Volume (veh/h)	70	86	258	315	71	85	281	860	439	124	1037	54
Number	1	6	16	5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	190.0	190.0	188.1	184.5	181.2	190.0	186.3	184.5	186.3	182.7	186.3	186.3
Adj Flow Rate, veh/h	74	91	272	332	75	89	296	905	462	131	1092	57
Adj No. of Lanes	2	1	1	2	1	0	2	3	1	1	2	1
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	0	0	1	3	0	0	2	3	2	4	2	2
Cap, veh/h	117	424	525	398	232	275	360	2297	907	156	1561	751
Arrive On Green	0.03	0.22	0.22	0.12	0.31	0.31	0.10	0.46	0.46	0.09	0.44	0.44
Sat Flow, veh/h	3510	1900	1599	3408	756	897	3442	5036	1583	1740	3539	1583
Grp Volume(v), veh/h	74	91	272	332	0	164	296	905	462	131	1092	57
Grp Sat Flow(s), veh/h/ln	1755	1900	1599	1704	0	1653	1721	1679	1583	1740	1770	1583
Q Serve(g_s), s	2.9	5.5	19.3	13.4	0.0	10.7	11.8	16.7	24.7	10.4	35.0	2.8
Cycle Q Clear(g_c), s	2.9	5.5	19.3	13.4	0.0	10.7	11.8	16.7	24.7	10.4	35.0	2.8
Prop In Lane	1.00		1.00	1.00		0.54	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	117	424	525	398	0	507	360	2297	907	156	1561	751
V/C Ratio(X)	0.63	0.21	0.52	0.83	0.00	0.32	0.82	0.39	0.51	0.84	0.70	0.08
Avail Cap(c_a), veh/h	225	424	525	753	0	507	736	3052	1144	335	2069	979
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	66.9	44.4	38.1	60.6	0.0	37.4	61.5	25.3	18.1	62.8	31.7	20.1
Incr Delay (d2), s/veh	5.5	1.2	3.6	4.7	0.0	1.7	4.7	0.1	0.4	11.3	0.7	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	3.0	9.1	6.6	0.0	5.1	5.9	7.7	10.9	5.5	17.1	1.2
LnGrp Delay(d),s/veh	72.4	45.6	41.8	65.3	0.0	39.1	66.2	25.4	18.5	74.2	32.4	20.1
LnGrp LOS	E	D	D	E		D	E	C	B	E	C	C
Approach Vol, veh/h		437			496			1663			1280	
Approach Delay, s/veh		47.7			56.6			30.7			36.1	
Approach LOS		D			E			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	8.7	47.0	16.6	68.0	20.4	35.3	18.7	65.9				
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0				
Max Green Setting (Gmax), s	9.0	43.0	27.0	85.0	31.0	21.0	30.0	82.0				
Max Q Clear Time (g_c+I1), s	4.9	12.7	12.4	26.7	15.4	21.3	13.8	37.0				
Green Ext Time (p_c), s	0.1	2.5	0.3	28.1	1.0	0.0	0.9	24.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			37.7									
HCM 2010 LOS			D									

















HCM 2010 Signalized Intersection Summary  
 3: Kings Hwy & I-75 NB Off Ramp/I-75 NB On Ramp

6/11/2014

Movement	SEL	SET	SER	NWL	NWT	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations				↖↗		↖↗	↖	↖↖↗			↖↖↗	↗
Volume (veh/h)	0	0	0	429	0	318	130	1428	0	0	1484	262
Number				5	2	12	7	4	14	3	8	18
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				184.5	0.0	184.5	179.2	186.3	0.0	0.0	186.3	182.7
Adj Flow Rate, veh/h				466	0	346	141	1552	0	0	1613	0
Adj No. of Lanes				2	0	2	1	3	0	0	3	1
Peak Hour Factor				0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %				3	0	3	6	2	0	0	2	4
Cap, veh/h				624	0	506	301	3738	0	0	3284	1003
Arrive On Green				0.18	0.00	0.18	0.05	0.73	0.00	0.00	0.65	0.00
Sat Flow, veh/h				3408	0	2760	1707	5253	0	0	5253	1553
Grp Volume(v), veh/h				466	0	346	141	1552	0	0	1613	0
Grp Sat Flow(s),veh/h/ln				1704	0	1380	1707	1695	0	0	1695	1553
Q Serve(g_s), s				12.6	0.0	11.4	2.5	11.4	0.0	0.0	16.1	0.0
Cycle Q Clear(g_c), s				12.6	0.0	11.4	2.5	11.4	0.0	0.0	16.1	0.0
Prop In Lane				1.00		1.00	1.00		0.00	0.00		1.00
Lane Grp Cap(c), veh/h				624	0	506	301	3738	0	0	3284	1003
V/C Ratio(X)				0.75	0.00	0.68	0.47	0.42	0.00	0.00	0.49	0.00
Avail Cap(c_a), veh/h				1394	0	1129	620	5305	0	0	3901	1191
HCM Platoon Ratio				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	1.00	1.00	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				37.8	0.0	37.3	7.5	4.9	0.0	0.0	9.0	0.0
Incr Delay (d2), s/veh				1.8	0.0	1.6	1.1	0.1	0.0	0.0	0.1	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				6.1	0.0	4.5	1.4	5.2	0.0	0.0	7.5	0.0
LnGrp Delay(d),s/veh				39.6	0.0	38.9	8.6	5.0	0.0	0.0	9.1	0.0
LnGrp LOS				D		D	A	A			A	
Approach Vol, veh/h					812			1693			1613	
Approach Delay, s/veh					39.3			5.3			9.1	
Approach LOS					D			A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4			7	8				
Phs Duration (G+Y+Rc), s		21.9		75.9			8.7	67.1				
Change Period (Y+Rc), s		4.0		4.0			4.0	4.0				
Max Green Setting (Gmax), s		40.0		102.0			23.0	75.0				
Max Q Clear Time (g_c+I1), s		14.6		13.4			4.5	18.1				
Green Ext Time (p_c), s		3.3		58.5			0.3	43.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				13.5								
HCM 2010 LOS				B								

























HCM 2010 Signalized Intersection Summary  
 4: Kings Hwy & I-75 SB On Ramp & I-75 SB Off Ramp

6/11/2014

										
Movement	SBL	SBR	NWL	NWR	NEL	NET	NER	SWL	SWT	SWR
Lane Configurations										
Volume (veh/h)	224	277	0	0	0	1226	297	303	1514	0
Number	1	16			7	4	14	3	8	18
Initial Q (Qb), veh	0	0			0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00			1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	184.5	190.0			0.0	186.3	181.0	186.3	186.3	0.0
Adj Flow Rate, veh/h	241	0			0	1318	0	326	1628	0
Adj No. of Lanes	1	1			0	2	1	1	3	0
Peak Hour Factor	0.93	0.93			0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	0			0	2	5	2	2	0
Cap, veh/h	335	308			0	1432	622	383	3086	0
Arrive On Green	0.19	0.00			0.00	0.40	0.00	0.10	0.61	0.00
Sat Flow, veh/h	1757	1615			0	3632	1538	1774	5253	0
Grp Volume(v), veh/h	241	0			0	1318	0	326	1628	0
Grp Sat Flow(s), veh/h/ln	1757	1615			0	1770	1538	1774	1695	0
Q Serve(g_s), s	5.1	0.0			0.0	14.0	0.0	4.0	7.3	0.0
Cycle Q Clear(g_c), s	5.1	0.0			0.0	14.0	0.0	4.0	7.3	0.0
Prop In Lane	1.00	1.00			0.00		1.00	1.00		0.00
Lane Grp Cap(c), veh/h	335	308			0	1432	622	383	3086	0
V/C Ratio(X)	0.72	0.00			0.00	0.92	0.00	0.85	0.53	0.00
Avail Cap(c_a), veh/h	711	653			0	1432	622	383	3086	0
HCM Platoon Ratio	1.00	1.00			1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00			0.00	1.00	0.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	15.0	0.0			0.0	11.2	0.0	8.8	4.5	0.0
Incr Delay (d2), s/veh	2.9	0.0			0.0	10.0	0.0	16.6	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0			0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.7	0.0			0.0	8.8	0.0	3.5	3.4	0.0
LnGrp Delay(d),s/veh	17.9	0.0			0.0	21.1	0.0	25.4	4.7	0.0
LnGrp LOS	B					C		C	A	
Approach Vol, veh/h	241					1318			1954	
Approach Delay, s/veh	17.9					21.1			8.1	
Approach LOS	B					C			A	
Timer	1	2	3	4	5	6	7	8		
Assigned Phs			3	4		6		8		
Phs Duration (G+Y+Rc), s			8.0	20.0		11.5		28.0		
Change Period (Y+Rc), s			4.0	4.0		4.0		4.0		
Max Green Setting (Gmax), s			4.0	16.0		16.0		24.0		
Max Q Clear Time (g_c+I1), s			6.0	16.0		7.1		9.3		
Green Ext Time (p_c), s			0.0	0.0		0.5		13.2		
<b>Intersection Summary</b>										
HCM 2010 Ctrl Delay			13.7							
HCM 2010 LOS			B							

# HCM Signalized Intersection Capacity Analysis 5: Kings Hwy & Rampart Blvd

6/11/2014





















												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	32	78	31	275	72	105	25	736	392	124	710	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	1900	1615	1665	1723	1615	1805	3505	1599	1787	3471	1615
Flt Permitted	0.95	1.00	1.00	0.95	0.97	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	1900	1615	1665	1723	1615	1805	3505	1599	1787	3471	1615
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	32	79	31	278	73	106	25	743	396	125	717	26
RTOR Reduction (vph)	0	0	29	0	0	89	0	0	209	0	0	11
Lane Group Flow (vph)	32	79	2	175	176	17	25	743	187	125	717	15
Heavy Vehicles (%)	4%	0%	0%	3%	0%	0%	0%	3%	1%	1%	4%	0%
Turn Type	Split	NA	Perm	Split	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			6
Actuated Green, G (s)	7.9	7.9	7.9	15.9	15.9	15.9	2.1	46.4	46.4	12.2	56.5	56.5
Effective Green, g (s)	7.9	7.9	7.9	15.9	15.9	15.9	2.1	46.4	46.4	12.2	56.5	56.5
Actuated g/C Ratio	0.08	0.08	0.08	0.16	0.16	0.16	0.02	0.47	0.47	0.12	0.57	0.57
Clearance Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	139	152	129	269	278	260	38	1652	754	221	1993	927
v/s Ratio Prot	0.02	c0.04		c0.11	0.10		0.01	c0.21		c0.07	0.21	
v/s Ratio Perm			0.00			0.01			0.12			0.01
v/c Ratio	0.23	0.52	0.02	0.65	0.63	0.07	0.66	0.45	0.25	0.57	0.36	0.02
Uniform Delay, d1	42.4	43.4	41.7	38.6	38.5	35.0	47.8	17.4	15.6	40.6	11.2	9.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	3.0	0.1	5.5	4.7	0.1	34.3	0.9	0.8	3.3	0.5	0.0
Delay (s)	43.3	46.4	41.7	44.2	43.2	35.1	82.1	18.3	16.3	43.9	11.7	9.0
Level of Service	D	D	D	D	D	D	F	B	B	D	B	A
Approach Delay (s)		44.7			41.7			19.0			16.3	
Approach LOS		D			D			B			B	

## Intersection Summary

HCM 2000 Control Delay	23.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	98.4	Sum of lost time (s)	16.0
Intersection Capacity Utilization	53.4%	ICU Level of Service	A
Analysis Period (min)	15		
c Critical Lane Group			

HCM 2010 Signalized Intersection Summary  
6: Luther Rd/Capricorn Blvd & Rampart Blvd













6/11/2014

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	129	372	62	23	262	49	34	8	20	53	13	82
Number	7	4	14	3	8	18	5	2	12	1	6	16
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	188.1	190.0	190.0	175.9	187.5	190.0	190.0	184.8	190.0	190.0	184.1	190.0
Adj Flow Rate, veh/h	137	396	66	24	279	52	36	9	21	56	14	87
Adj No. of Lanes	1	1	0	1	1	0	1	1	0	0	1	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	0	0	8	1	1	0	0	0	14	14	14
Cap, veh/h	499	587	98	37	716	133	558	191	446	262	92	329
Arrive On Green	0.37	0.37	0.37	0.02	0.47	0.47	0.39	0.39	0.39	0.39	0.39	0.39
Sat Flow, veh/h	1055	1589	265	1675	1538	287	1314	494	1152	445	238	849
Grp Volume(v), veh/h	137	0	462	24	0	331	36	0	30	157	0	0
Grp Sat Flow(s),veh/h/ln	1055	0	1853	1675	0	1825	1314	0	1645	1532	0	0
Q Serve(g_s), s	5.3	0.0	11.4	0.8	0.0	6.4	1.0	0.0	0.6	0.0	0.0	0.0
Cycle Q Clear(g_c), s	6.5	0.0	11.4	0.8	0.0	6.4	4.5	0.0	0.6	3.4	0.0	0.0
Prop In Lane	1.00		0.14	1.00		0.16	1.00		0.70	0.36		0.55
Lane Grp Cap(c), veh/h	499	0	685	37	0	850	558	0	637	683	0	0
V/C Ratio(X)	0.27	0.00	0.67	0.64	0.00	0.39	0.06	0.00	0.05	0.23	0.00	0.00
Avail Cap(c_a), veh/h	1062	0	1673	247	0	2051	558	0	637	683	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	0.00
Uniform Delay (d), s/veh	13.3	0.0	14.4	26.3	0.0	9.5	12.8	0.0	10.4	11.3	0.0	0.0
Incr Delay (d2), s/veh	0.3	0.0	1.2	16.7	0.0	0.3	0.2	0.0	0.1	0.8	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	6.0	0.5	0.0	3.3	0.4	0.0	0.3	1.7	0.0	0.0
LnGrp Delay(d),s/veh	13.6	0.0	15.5	43.0	0.0	9.8	13.0	0.0	10.5	12.0	0.0	0.0
LnGrp LOS	B		B	D		A	B		B	B		
Approach Vol, veh/h		599			355			66			157	
Approach Delay, s/veh		15.1			12.0			11.9			12.0	
Approach LOS		B			B			B			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2	3	4		6		8				
Phs Duration (G+Y+Rc), s		25.0	5.2	24.1		25.0		29.3				
Change Period (Y+Rc), s		4.0	4.0	4.0		4.0		4.0				
Max Green Setting (Gmax), s		21.0	8.0	49.0		21.0		61.0				
Max Q Clear Time (g_c+I1), s		6.5	2.8	13.4		5.4		8.4				
Green Ext Time (p_c), s		1.0	0.0	6.7		1.0		6.9				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			13.6									
HCM 2010 LOS			B									



HCM 2010 Signalized Intersection Summary  
7: Kings Hwy & Site Dwy

6/11/2014

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Volume (veh/h)	52	567	551	575	728	34		
Number	7	14	5	2	6	16		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	186.3	186.3	186.3	182.7	184.5	186.3		
Adj Flow Rate, veh/h	57	616	599	625	791	37		
Adj No. of Lanes	1	2	1	2	2	1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Percent Heavy Veh, %	2	2	2	4	3	2		
Cap, veh/h	445	698	650	2148	980	442		
Arrive On Green	0.25	0.25	0.27	0.62	0.28	0.28		
Sat Flow, veh/h	1774	2787	1774	3563	3597	1583		
Grp Volume(v), veh/h	57	616	599	625	791	37		
Grp Sat Flow(s),veh/h/ln	1774	1393	1774	1736	1752	1583		
Q Serve(g_s), s	1.5	13.0	14.2	5.1	12.9	1.1		
Cycle Q Clear(g_c), s	1.5	13.0	14.2	5.1	12.9	1.1		
Prop In Lane	1.00	1.00	1.00			1.00		
Lane Grp Cap(c), veh/h	445	698	650	2148	980	442		
V/C Ratio(X)	0.13	0.88	0.92	0.29	0.81	0.08		
Avail Cap(c_a), veh/h	463	727	713	2320	1028	465		
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00		
Uniform Delay (d), s/veh	17.8	22.1	12.3	5.4	20.6	16.3		
Incr Delay (d2), s/veh	0.1	12.0	16.6	0.1	4.7	0.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	0.8	10.3	12.7	2.5	6.8	0.5		
LnGrp Delay(d),s/veh	17.9	34.1	28.9	5.5	25.2	16.4		
LnGrp LOS	B	C	C	A	C	B		
Approach Vol, veh/h	673			1224	828			
Approach Delay, s/veh	32.7			17.0	24.8			
Approach LOS	C			B	C			
Timer	1	2	3	4	5	6	7	8
Assigned Phs		2		4	5	6		
Phs Duration (G+Y+Rc), s		42.0		19.4	20.8	21.1		
Change Period (Y+Rc), s		4.0		4.0	4.0	4.0		
Max Green Setting (Gmax), s		41.0		16.0	19.0	18.0		
Max Q Clear Time (g_c+I1), s		7.1		15.0	16.2	14.9		
Green Ext Time (p_c), s		11.4		0.3	0.7	2.3		
Intersection Summary								
HCM 2010 Ctrl Delay			23.2					
HCM 2010 LOS			C					

HCM 2010 TWSC  
8: Kings Highway & Kingsway Circle

6/11/2014

Intersection

Int Delay, s/veh 2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Vol, veh/h	33	56	113	562	535	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	200	-	-	200
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	4	3	2
Mvmt Flow	36	61	123	611	582	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1439	582	582	0	-	0
Stage 1	582	-	-	-	-	-
Stage 2	857	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	146	513	992	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	416	-	-	-	-	-
Platoon blocked, %					-	-
Mov Cap-1 Maneuver	128	513	992	-	-	-
Mov Cap-2 Maneuver	128	-	-	-	-	-
Stage 1	559	-	-	-	-	-
Stage 2	364	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.4	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	992	-	128	513	-	-
HCM Lane V/C Ratio	0.124	-	0.28	0.119	-	-
HCM Control Delay (s)	9.1	-	43.7	13	-	-
HCM Lane LOS	A	-	E	B	-	-
HCM 95th %tile Q(veh)	0.4	-	1.1	0.4	-	-

# Arterial Level of Service

6/11/2014

## Arterial Level of Service: NE Kings Hwy

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
I-75 SB On Ramp	II	37	15.6	43.6	59.2	0.12	7.6	F
I-75 NB Off Ramp	II	45	17.0	7.0	24.0	0.16	23.4	C
Sandhill Blvd	II	45	24.4	32.5	56.9	0.22	14.2	E
Site Dwy	II	33	23.0	3.4	26.4	0.18	25.1	C
Total	II		80.0	86.5	166.5	0.69	14.9	E

## Arterial Level of Service: SW Kings Hwy

Cross Street	Arterial Class	Flow Speed	Running Time	Signal Delay	Travel Time (s)	Dist (mi)	Arterial Speed	Arterial LOS
Site Dwy	II	36	43.6	24.0	67.6	0.41	22.1	C
Sandhill Blvd	II	40	21.2	45.7	66.9	0.18	9.9	F
I-75 NB On Ramp	II	45	24.4	19.1	43.5	0.22	18.5	D
I-75 SB Off Ramp	II	45	17.0	7.8	24.8	0.16	22.7	C
Total	II		106.2	96.6	202.8	0.98	17.4	D